Viad Corporate Center
1850 North Central Avenue
Suite 1100
Phoenix, Arizona 85004
www.lawyers.com/lawms/

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April 24, 2007

VIA HAND-DELIVERY

Docket Control
Arizona Corporation Commission
1200 W. Washington
Phoenix, AZ 85004

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2007 APR 24 A 11: 54
AZ CORP COMMISSION
DOCUMENT CONTROL

Re: Northern Arizona Energy Project
Docket No. L-00000FF-07-0134-00133

Dear Sir or Madam:

Enclosed for filing are is an original and 26 copies of the Class I Permit Application for the above-referenced matter. Please return to us one date stamped/conformed copy.

Please note that we are having copies of this document delivered to:

1. Laurie Woodall, Chairman, Arizona Power Plant & Transmission Line Siting Committee
2. Maureen Scott, Esq. – Staff
3. Ken Sundlof, Esq. – Intervenor – Mohave County, AZ

If you have any questions or need anything further, please do not hesitate to contact us. Thank you for your assistance.

Sincerely,

LuAnn Kay Kornegay
Assistant to Jay I. Moyes

LKK/me
Enclosures

Arizona Corporation Commission
DOCKETED
APR 24 2007
DOCKETED BY MR

sierra
research

1801 J Street
Sacramento, CA 95814
Tel: (916) 444-6666
Fax: (916) 444-8373

Ann Arbor, MI
Tel: (734) 761-6666
Fax: (734) 761-6755

March 26, 2007

Trevor Baggiore
Permit Section Manager
Air Quality Bureau
Arizona Department of Environmental Quality
1110 W. Washington St.
Phoenix, AZ 85007

Subject: Class I Air Quality Permit Application for Northern Arizona Energy, LLC

Dear Trevor:

Sierra Research, on behalf of Northern Arizona Energy, LLC (NAE), hereby submits a Class I Air Quality Permit Application to the Arizona Department of Environmental Quality (ADEQ) for the proposed Northern Arizona Energy peaking power project in Mohave County, Arizona. On January 22, 2007, NAE, under the name Arroyo Energy, LLC, submitted a request for accelerated permit processing to ADEQ for this project along with a fee of $15,000. The project and company names changed from Arroyo Energy to Northern Arizona Energy subsequent to that request. While this application will be reviewed as a minor modification to a major stationary source (Griffith Energy Facility), NAE is requesting a separate stand-alone permit for the new facility due to the possible future sale of the facility to an independent owner.

Should you have any questions, please feel free to contact me (916) 444-6666 or Dana Diller (480) 664-8154.

Sincerely,

Mark L Peak
Permit Engineer
Sierra Research

attachments

cc: Dana Diller
Kevin Johnson
Joe Otahal
Gary Rubenstein

Class I Permit Application

Northern Arizona Energy, LLC
Mohave County, Arizona

Prepared by:

Sierra Research, Inc.
1801 J Street
Sacramento, California 95814
(916) 444-6666

Submitted by:

Northern Arizona Energy, LLC

March 2007

sierra research

Class I Permit Application
Northern Arizona Energy, LLC
Mohave County, Arizona

prepared for:

Northern Arizona Energy, LLC

March 2007

prepared by:

Sierra Research, Inc.
1801 J Street
Sacramento, California 95814
(916) 444-6666

Submitted by:
Northern Arizona Energy, LLC

CLASS I PERMIT APPLICATION
NORTHERN ARIZONA ENERGY, LLC
MOHAVE COUNTY, ARIZONA

prepared for:

Northern Arizona Energy, LLC

March 2007

Sierra Research, Inc.
1801 J Street
Sacramento, CA 95814
(916) 444-6666

CLASS I PERMIT APPLICATION
NORTHERN ARIZONA ENERGY, LLC
MOHAVE COUNTY, ARIZONA

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1. INTRODUCTION AND PERMIT APPLICATION

Northern Arizona Energy, LLC (Northern Arizona Energy or Applicant) presents this permit application for a proposed nominal 175 megawatt (MW) natural gas fired peaking power generation project (Standard Classification Code 4911). The Northern Arizona Energy Project (Project) will be constructed and operated in the existing Interstate 40 Industrial Corridor, approximately three (3) miles north of the Griffith Interchange in Mohave County, Arizona. The Project will interconnect with the Western Area Power Administration (Western) 230kV system at the Griffith Switchyard.

The project area is classified Attainment for all applicable pollutants and is under the jurisdiction of the Arizona Department of Environmental Quality (ADEQ). The Project meets the requirements to obtain a Class I permit. ADEQ has been delegated full authority for major source permitting and will serve as the primary authority for the air permit approvals.

The proposed Project is located on a forty (40) acre parcel of land (Project Property) that is controlled by the Applicant. The Project Property occupies the northern-most seven hundred (700) feet of the original one hundred, sixty (160) acre parcel of land owned by Griffith Energy LLC. Griffith Energy's 650 MW power generation facility (Griffith Energy Project) is located on the southern portion (remaining 120 acres) of the original parcel. Within the Project Property, the equipment and interconnection facilities occupy approximately eight (8) acres (Project Site). During construction, up to six (6) acres of the Project Property has also been designated for the contractor trailers, equipment and material lay down area and worker parking (Temporary Construction Area).

The Applicant is seeking a separate air permit from that of Griffith Energy LLC, the owner and operator of the Griffith Energy Project. A business transaction is pending between LS Power, the upstream owner of Northern Arizona Energy and Griffith Energy and Dynegy Corporation. Upon completion of this transaction, operating assets such as the Griffith Energy Project will be owned by Dynegy, and development projects such as the Northern Arizona Energy Project will be separately owned by a Joint Venture of LS Power and Dynegy. Due to this separate ownership structure a separate permit is required for the Northern Arizona Energy Project.

It is understood by the Applicant that from a regulatory process perspective, ADEQ will approach the application and regulatory process as a modification to the Griffith Energy Project. Since Griffith has a Class I Prevention of Significant Deterioration (PSD) permit, Northern Arizona Energy will also be issued a Class I permit.

All emissions from the Project are below PSD significance levels; therefore the application is considered a minor modification to an existing major source. The Project is subject to Federal New Source Performance Standard for Stationary Combustion Turbines (40 CFR Part 60 Subpart KKKK); therefore it is considered a Title V source for fee purposes. While emissions for all pollutants are below 100 tons per year, Northern Arizona Energy will be issued a Title V permit. As an electric generation facility with units having the potential to generate more than 25 MW, the Project will also be subject to the requirements of the Title IV Acid Rain program.

Northern Arizona Energy presents this application requesting flexibility for a "phased construction" permit. The potential phased construction is described in Chapter 2 of this application along with the general project description.

This application is presented pursuant to the requirements codified in Title 18 Chapter 2 of the Arizona Administrative Code (AAC) and has been certified by a responsible official of Northern Arizona Energy. The permit application forms are included at the end of this section. The application is organized in the following manner

Section 1 – Introduction and ADEQ Permit Application Forms
Section 2 – Project Description
Section 3 – Emissions Inventory
Section 4 – Ambient Air Quality Impacts
Section 5 – Applicable Requirements
Section 6 – Control Technology Review
Section 7 – Compliance and Monitoring

The responsible persons concerning all matters in this permit application are:

Ms. Dana Diller
Project Director (Contractor)
High Energy Resource Services, LLC
6410 E. Everett Drive
Scottsdale, AZ 85254
Phone: (480) 664-8154
Facsimile: (480) 636-8531
E-mail: ddiller@cox.net

For written correspondence, please copy
Jay Moyes
Moyes Storey Law Offices
1850 N Central Avenue, Suite 1100
Phoenix, Arizona 85004
Phone: (602) 604-2106
Facsimile: (602) 274-9135
E-mail: jimoyes@lawms.com

Mr. Kevin R. Johnson
Vice President
LS Power Generation
1735 Technology Dr, Ste 820
San Jose, CA 95110
Phone: (408) 572-1290
Facsimile: (408) 392-9757
E-mail: KJohnson@lspower.com

Mr. Mark Peak
Senior Engineer
Sierra Research
1801 J Street
Sacramento, California 95814
Phone: (916) 444-6666
Facsimile: (916) 444-8373
E-mail: mpeak@sierraresearch.com

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Division
1110 West Washington • Phoenix, AZ 85007 • Phone: (602) 771-2338

STANDARD PERMIT APPLICATION FORM
(As required by A.R.S. § 49-426, and Chapter 2, Article 3, Arizona Administrative Code)

1. Permit to be issued to: (Business license name of organization that is to receive permit) Northern Arizona Energy, LLC

2. Mailing Address: 1735 Technology Drive, Suite 820
   City: San Jose State: CA ZIP: 95110

3. Previous Company Name: (if applicable)

4. Name (or names) of Owners/Principals: Northern Arizona Energy, LLC
   Phone: Fax: Email:

5. Name of Owner's Agent:
   Phone: Fax: Email:

6. Plant/Site Manager/Contact Person and Title: Mark Peak, Sierra Research
   Phone: 916-444-6666 Fax: 916-444-8373 Email: mpeak@sierraresearch.com

7. Plant Site Name: Northern Arizona Energy Project
   Plant Site Location/Address: Apache Road
   City: County: Mohave ZIP:
   Indian Reservation (if applicable, which one):
   Latitude/Longitude, Elevation: 35° 03' 30" N, 114° 08' 22" W, 2475 feet

8. Equipment Purpose: Power generation
   Equipment List/Description: See Attached Equipment List

9. Type of Organization:
   ☐ Corporation ☐ Individual Owner
   ☐ Partnership ☐ Government Entity (Government Facility Code:)
   ☒ Other Limited Liability Company

10. Permit Application Basis: ☒ New Source ☐ Revision ☐ Renewal of Existing Permit
    (Check all that apply.) ☐ Portable Source ☐ General Permit
    For renewal or modification, include existing permit number (and exp. date):
    Date of Commencement of Construction or Modification: 4th quarter 2007 (earliest)
    Is **any** of the equipment to be leased to another individual or entity? ☐ Yes ☒ No
    Standard Industrial Classification Code: 4911 State Permit Class: Class I

11. Signature of Responsible Official of Organization:
    Official Title of Signer: Vice President

12. Typed or Printed Name of Signer: Kevin R. Johnson
    Date: March 23, 2007 Telephone Number: (408) 572-1290
    Company Name: Northern Arizona Energy, LLC

NORTHERN ARIZONA ENERGY EMISSION SOURCES

DATE _____

Estimated "Potential to Emit" per R18-2-101.
Review of applications and issuance of permits will be expedited by supplying all necessary information on this Table.

REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS									
EMISSION POINT [1]		CHEMICAL COMPOSITION OF TOTAL STREAM	AIR POLLUTANT EMISSION RATE		UTM COORDINATES OF EMISSION POINT [5]			STACK SOURCES [6]					NONPOINT	
										EXIT DATA			SOURCES [7]	
NUMBER	NAME	REGULATED AIR POLLUTANT NAME [2]	#/ HR. [3]	TONS/ YEAR [4]	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND (feet)	HEIGHT ABOVE STRUC. (feet)	DIA (ft.)	VEL. (fps)	TEMP. (°F)	LENGTH (ft.)	WIDTH (ft.)
0001	CT1	NOx	7.90	*	11	761,137.48	3,883,051.21	85	29	10	134.7	829.1	NA	NA
0001	CT1	CO	5.77	*	"	"	"	"	"	"	"	"	NA	NA
0001	CT1	SO2	6.14	*	"	"	"	"	"	"	"	"	NA	NA
0001	CT1	PM10/PM2.5	2.70	*	"	"	"	"	"	"	"	"	NA	NA
0001	CT1	VOC	2.75	*	"	"	"	"	"	"	"	"	NA	NA

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL 2475 feet
ADEQ STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (A.A.C. R18-2-101)
* Combined emissions cap for all turbines (CT1 – CT4) - NOx – 39.71 TPY, CO – 35.90 TPY, SO2 – 32.30 TPY, PM10/PM2.5 – 14.31 TPY, VOC – 15.54 TPY

General Instructions:

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as many lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.
2. Components to be listed include regulated air pollutants as defined in R18-2-101. Examples of typical component names are: Carbon Monoxide (CO), Nitrogen Oxides (NO_X), Sulfur Dioxide (SO_2), Volatile Organic Compounds (VOC), particulate matter (PM), particulate less than 10 microns (PM_{10}), etc. Abbreviations are O.K.
3. Pounds per hour (#/HR) is maximum potential emission rate expected by applicant.
4. Tons per year is annual maximum potential emission expected by applicant, which takes into account process operating schedule.
5. As a minimum applicant shall furnish a facility plot plan as described in the filing instructions. UTM coordinates are required only if the source is a major source or is required to perform refined modeling for the purposes of demonstrating compliance with ambient air quality guidelines.
6. Supply additional information as follows if appropriate:
   (a) Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
   (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack height above the ground" of stack.
7. \Dimensions of nonpoint sources as defined in R18-2-101.

NORTHERN ARIZONA ENERGY EMISSION SOURCES

DATE _____

Estimated "Potential to Emit" per R18-2-101.
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NUMBER	NAME	REGULATED AIR POLLUTANT NAME [2]	#/ HR. [3]	TONS/ YEAR [4]	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND (feet)	HEIGHT ABOVE STRUC. (feet)	DIA (ft.)	VEL. (fps)	TEMP. (°F)	LENGTH (ft.)	WIDTH (ft.)
0002	CT2	NOx	7.90	*	11	761,175.58	3,883,052.46	85	29	10	134.7	829.1	NA	NA
0002	CT2	CO	5.77	*	"	"	"	"	"	"	"	"	NA	NA
0002	CT2	SO2	6.14	*	"	"	"	"	"	"	"	"	NA	NA
0002	CT2	PM10/PM2.5	2.70	*	"	"	"	"	"	"	"	"	NA	NA
0002	CT2	VOC	2.75	*	"	"	"	"	"	"	"	"	NA	NA

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL 2475 feet
ADEQ STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (A.A.C. R18-2-101)
* Combined emissions cap for all turbines (CT1 – CT4) - NOx – 39.71 TPY, CO – 35.90 TPY, SO2 – 32.30 TPY, PM10/PM2.5 – 14.31 TPY, VOC – 15.54 TPY

General Instructions:

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7. Dimensions of nonpoint sources as defined in R18-2-101.

NORTHERN ARIZONA ENERGY EMISSION SOURCES

DATE _____

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NUMBER	NAME	REGULATED AIR POLLUTANT NAME [2]	#/ HR. [3]	TONS/ YEAR [4]	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND (feet)	HEIGHT ABOVE STRUC. (feet)	DIA (ft.)	VEL. (fps)	TEMP. (°F)	LENGTH (ft.)	WIDTH (ft.)
0003	CT3	NOx	7.90	*	11	761,213.68	3,883,053.70	85	29	10	134.7	829.1	NA	NA
0003	CT3	CO	5.77	*	"	"	"	"	"	"	"	"	NA	NA
0003	CT3	SO2	6.14	*	"	"	"	"	"	"	"	"	NA	NA
0003	CT3	PM10/PM2.5	2.70	*	"	"	"	"	"	"	"	"	NA	NA
0003	CT3	VOC	2.75	*	"	"	"	"	"	"	"	"	NA	NA

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL 2475 feet
ADEQ STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (A.A.C. R18-2-101)
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7. Dimensions of nonpoint sources as defined in R18-2-101.

NORTHERN ARIZONA ENERGY EMISSION SOURCES

Estimated "Potential to Emit" per R18-2-101.
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0004	CT4	NOx	7.90	*	11	761,251.78	3,883,054.94	85	29	10	134.7	829.1	NA	NA
0004	CT4	CO	5.77	*	"	"	"	"	"	"	"	"	NA	NA
0004	CT4	SO2	6.14	*	"	"	"	"	"	"	"	"	NA	NA
0004	CT4	PM10/PM2.5	2.70	*	"	"	"	"	"	"	"	"	NA	NA
0004	CT4	VOC	2.75	*	"	"	"	"	"	"	"	"	NA	NA

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL 2475 feet
ADEQ STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (A.A.C. R18-2-101)
* Combined emissions cap for all turbines (CT1 – CT4) - NOx – 39.71 TPY, CO – 35.90 TPY, SO2 – 32.30 TPY, PM10/PM2.5 – 14.31 TPY, VOC – 15.54 TPY

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7. Dimensions of nonpoint sources as defined in R18-2-101.

NORTHERN ARIZONA ENERGY EMISSION SOURCES

DATE _____

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										DIA (ft.)	VEL. (fps)	TEMP. (°F)	LENGTH (ft.)	WIDTH (ft.)
0005	Inlet Air Chiller Module (6 cells)	PM10/PM2.5	0.16	0.47									NA	NA
	Cell 1		*		11	761,271.15	3,883,063.89	45	2	12	19.9	90.0		
	Cell 2		*		11	761,276.60	3,883,063.89	45	2	12	19.9	90.0		
	Cell 3		*		11	761,282.05	3,883,063.89	45	2	12	19.9	90.0		
	Cell 4		*		11	761,271.15	3,883,067.70	45	2	12	19.9	90.0		
	Cell 5		*		11	761,276.60	3,883,067.70	45	2	12	19.9	90.0		
	Cell 6		*		11	761,282.05	3,883,067.70	45	2	12	19.9	90.0		

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL 2475 feet
ADEQ STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (A.A.C. R18-2-101)
* total emissions equally divided to each cell – 0.0259 lb/hr/cell

General Instructions:

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as many lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.
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   (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack height above the ground" of stack.
7. Dimensions of nonpoint sources as defined in R18-2-101.

EQUIPMENT LIST

The following table should include all equipment utilized in the Project and be completed with all data requested. Be sure to notate the units (tons/hour, horsepower, etc.) when recording the Maximum Rated Capacity information. Be sure to notate the Serial Number and/or the Equipment ID Number. The date of manufacture must be included in order to determine if portions of the facility are NSPS applicable. Make additional copies of this form if necessary.

Type of Equipment	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
Combustion Turbines 1-4	48 MW	General Electric	LM6000 PC SPRINT Nxgen	TBD	TBD	CT1, CT2, CT3, & CT4
Chiller for Combustion Turbines 1-4	345 gpm – Recirculation Rate	TBD	TBD	TBD	TBD	Chiller

COMPLIANCE CERTIFICATION AND CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS

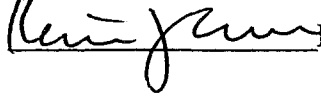
This certification must be signed by the Responsible Official. Applications without a signed certification will be deemed incomplete.

I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by ADEQ as public record. I also attest that I am in compliance with the applicable requirements of the General Permit and will continue to comply with such requirements and any future requirements that become effective during the life of the General Permit. I will present a certification of compliance to ADEQ no less than semiannually and more frequently if specified by ADEQ. I further state that I will assume responsibility for the construction, modification, or operation of the source in accordance with Arizona Administrative Code, Title 18, Chapter 2 and any permit issued thereof.

Typed or Printed Company Name: Northern Arizona Energy, LLC

Official Title of Signer: Vice President

Typed or Printed Name of Signer: Kevin R. Johnson

Signature of Responsible Official:  Date: March 23, 2007

2. PROJECT DESCRIPTION

The Northern Arizona Energy Project (Project) will be a nominal 175 MW natural gas fired simple cycle power generation facility. It is comprised of four (4) General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) with inlet air chillers. The Project will be designed to produce 175 MW of net electrical output with a heat rate of 9975 Btu/kWh (HHV) based upon the design condition ambient temperature of 90 degrees Fahrenheit (°F). Pipeline quality natural gas will be the only fuel combusted by the CTGs The Project will utilize an average of approximately 1,750 Million British Thermal Units (MMBtu) (HHV) of gas per hour, 28,000 MMBtu per 16-hour day, and 42,000 MMBtu per 24-hour day.

The Project is located in Mohave County, Arizona, just west of Interstate 40, approximately three (3) miles north of the Griffith interchange. The Project is approximately 110 miles southeast of Las Vegas, Nevada via Arizona Highway 93 and 200 miles northwest of Phoenix, Arizona. The Project location is shown in Figure 2-1.

The Griffith Energy Project (Griffith) is a 600 MW natural gas-fired, combined cycle power plant located south of the Project. In 1998, Griffith was sited in the I-40 Industrial Corridor. As noted previously, the northern 40 acres of the prior original Griffith site forms the Project Property. The Project Property and Project Site are shown in Figure 2-2.

Northern Arizona Energy proposes to have the flexibility to construct the four (4) CTGs in a "phased construction". If the initial capacity requirement of power purchase agreements require the generation capability of only two (2) CTGs, Northern Arizona Energy would initially construct two CTGs and delay the installation of the second pair of CTGs. However, the application evaluates the potential air quality impacts of the total Project at full capacity, or all four (4) CTG in operation from Project inception.

The Project has been designed to supply energy to the customer within ten (10) minutes of a CTG startup. Given this quick start capability and the associated operating performance and fuel efficiency of the LM6000 technology, the Project will serve the peak load requirements of customers in Mohave County, the broader state of Arizona load, and surrounding regional load centers.

The Project will interconnect with the Western Area Power Administration (WAPA) 230kV system at the Griffith Switchyard. There will be one generator step-up (GSU) transformer per CTG pair.

The LM6000 combustion turbine is a two-shaft gas turbine engine derived from the core of the CF6-80C2 engine, which is GE's high thrust, high efficiency aircraft engine. The LM6000 uses state-of-the-art technology to efficiently burn clean natural gas with reduced nitrogen oxides (NOx) and carbon monoxide (CO) emissions. Each unit is equipped with water injection to the combustors for reducing the production of NOx. In addition, a selective catalytic reduction (SCR) system further reduces NOx and an oxidation catalyst reduces CO and volatile organic compound (VOC) emissions.

Each CTG will also be equipped with a SPRINT (SPRay INTer-cooling) system, which enhances the efficiency and output of the gas turbine engine by spraying micro-droplets of water into the inter-stage air stream between the low pressure compressor and the high pressure compressor. The water is atomized to a droplet diameter of less than 20 microns by using inter-stage bleed air and special nozzles. As the droplets evaporate, the air temperature is reduced and the mass flow is increased. This results in greater power output and better fuel efficiency.

The CTGs will be housed in a metal enclosure to protect the units from the elements and to reduce noise.

The combustion gases will exit the turbine at approximately 830°F and then pass through an oxidization catalyst for control of CO and VOC emissions and the SCR system for NOx emission control. The SCR system is used in conjunction with ammonia injection to reduce NOx emissions. A 19 percent aqueous ammonia solution (NH_3) is injected into the CTG exhaust gas stream that passes over a catalyst bed that reduces the oxides of nitrogen to inert nitrogen. The SCR equipment includes a reactor chamber, catalyst modules, ammonia storage system, ammonia vaporization and injection system, and monitoring equipment and sensors. The ammonia unloading area will consist of a curbed concrete pad and containment vault. After passing through the SCR system, the exhaust gases exit through the attached stack. Each exhaust stack will be 85 feet in height and 10 feet in diameter. The stack will be equipped with continuous emissions monitors (CEMS) for CO and NOx, and test connections for performance monitoring.

Auxiliary equipment will include inlet air filters with chiller coils, chiller module, circulating water pumps, water treatment equipment, natural gas compressors, generator step-up and auxiliary transformers, and water storage tanks.

The air intake system provides filtered air to the combustion turbine compressors. Mounted above each combustion turbine, the intake system is equipped with a self-cleaning filter system to clean particulates from the air. The system is provided with access for inspection and maintenance. Inlet air chilling will be used to enhance gas turbine performance during times of high ambient air temperatures. The inlet chilling system consists of heat exchanger coils located in the inlet air stream. Chilled water from the chiller module flows through the coils to cool the incoming air. This results in increased electrical output and improved fuel efficiency for the units.

The chiller module will provide heat rejection for the centrifugal chiller used to supply chilled water to the air inlet coils. Makeup water will be pre-treated water from Griffith, as well as any condensate from the chiller coils. The circulating water will be continuously treated and controlled in order to achieve approximately 6 cycles of concentration.

Makeup water will replace water lost from evaporation, drift, and blowdown. A chemical feed system will supply water-conditioning chemicals to the circulating water to minimize corrosion and control the formation of mineral scale and bio-fouling.

The aqueous ammonia system provides for the receipt, storage, and delivery of 19 percent aqueous ammonia to the SCR systems to reduce NOx emissions. Aqueous ammonia will be delivered to the Project Site via tanker trucks and offloaded to an aboveground 10,000 gallon storage tank.

High-pressure natural gas will be supplied to the Project from the El Paso Natural Gas Company (El Paso) and Transwestern Pipeline Company (Transwestern) natural gas interstate pipelines to the Unisource Energy Services (UES) gas distribution system located adjacent to the Project Site. A new UES-owned metering station will be constructed adjacent to the existing Griffith metering station. From this new metering station, gas will be piped to the gas compressor and conditioning equipment skids. The gas conditioning skids will filter gas particulates and drop out moisture contained in the gas. The natural gas system line pressure is expected to be 600 psig at the Project Site boundary. Gas compressors will increase the natural gas supply pressure for the CTGs to approximately 675 psig. Pressure reduction and control valves are used to feed gas to the CTGs.

The Project layout is shown in Figure 2-3, Facility Layout Plan.

Figure 2-1
General Location Map

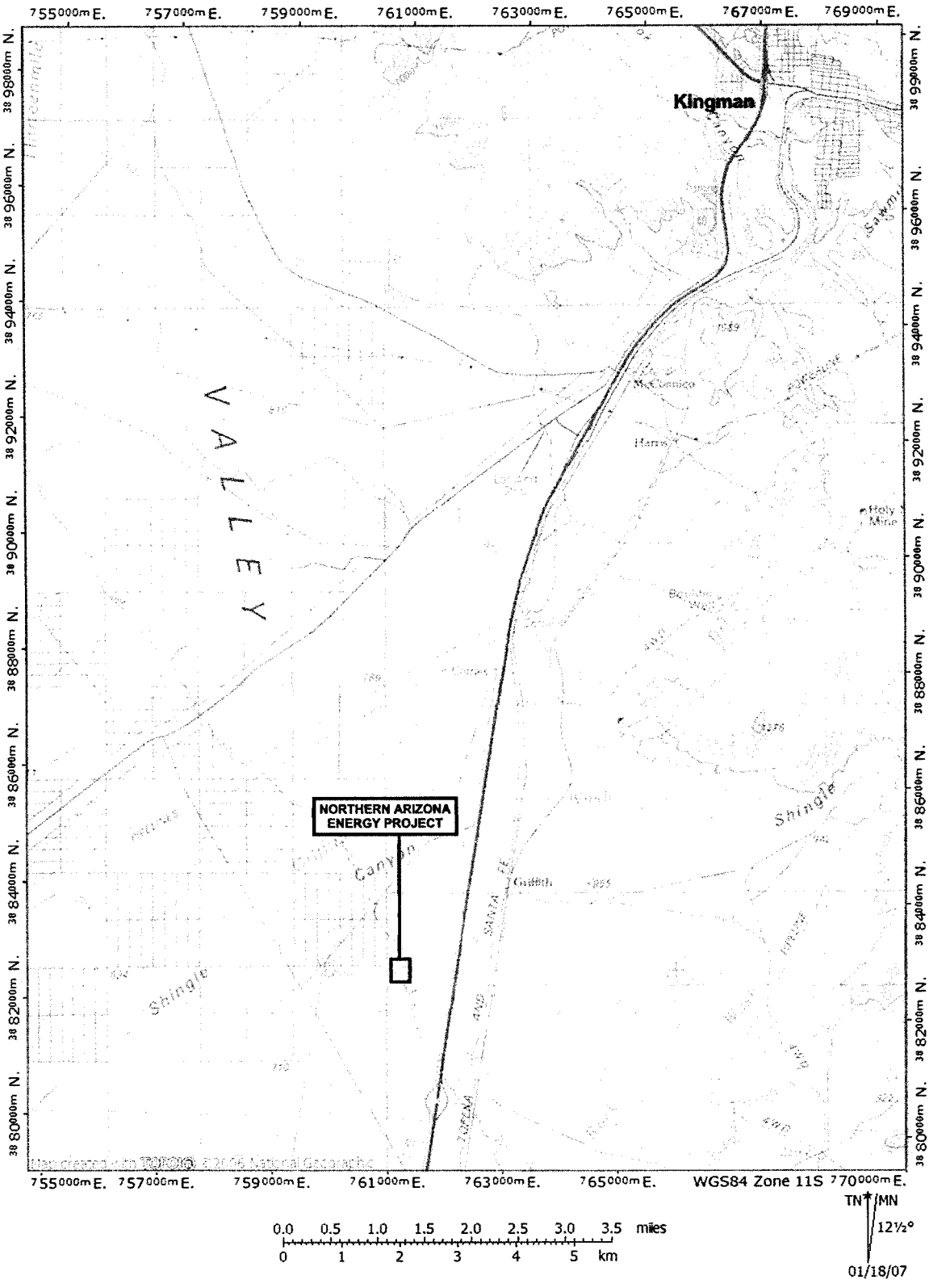


Figure 2-2
Project Property and Project Site

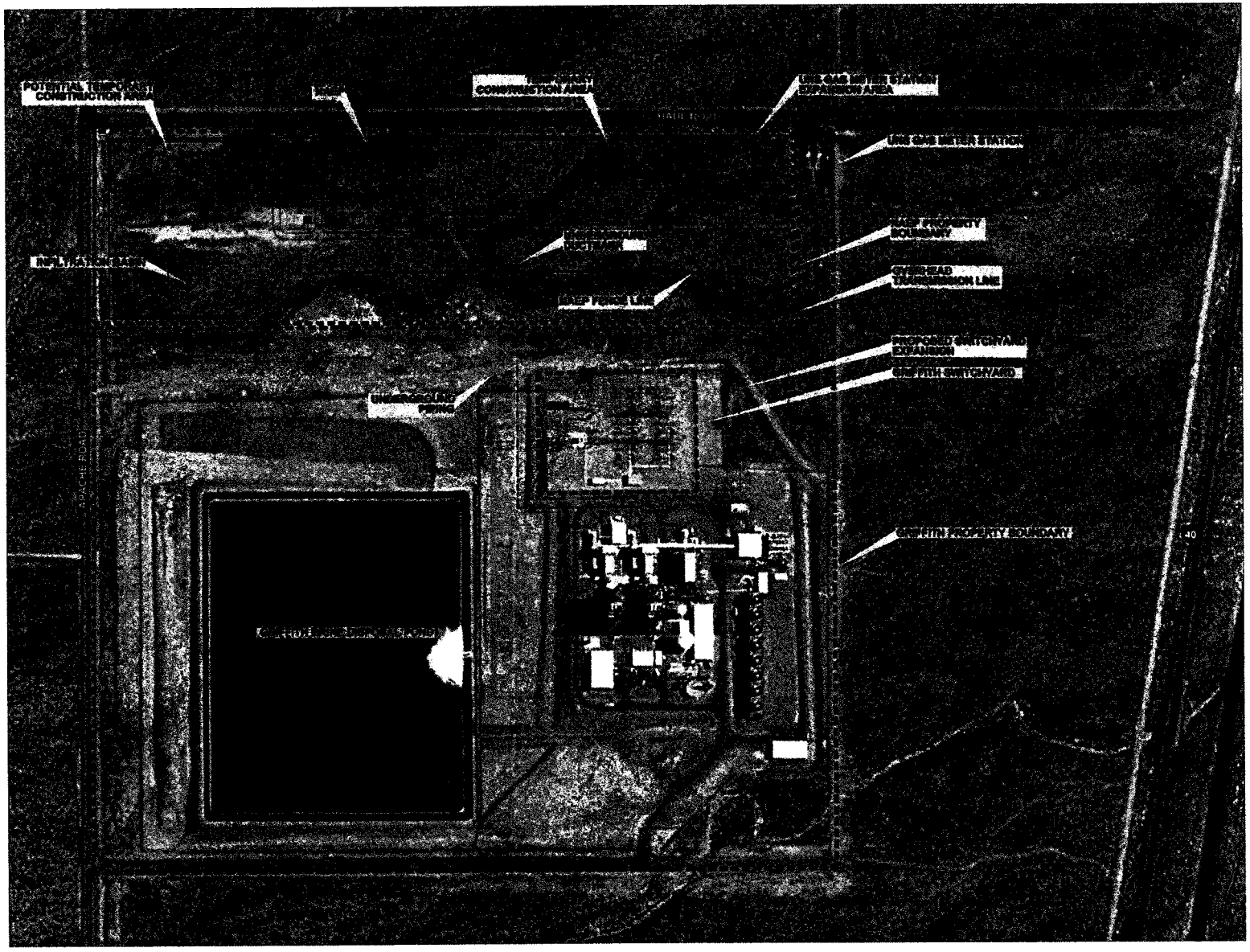
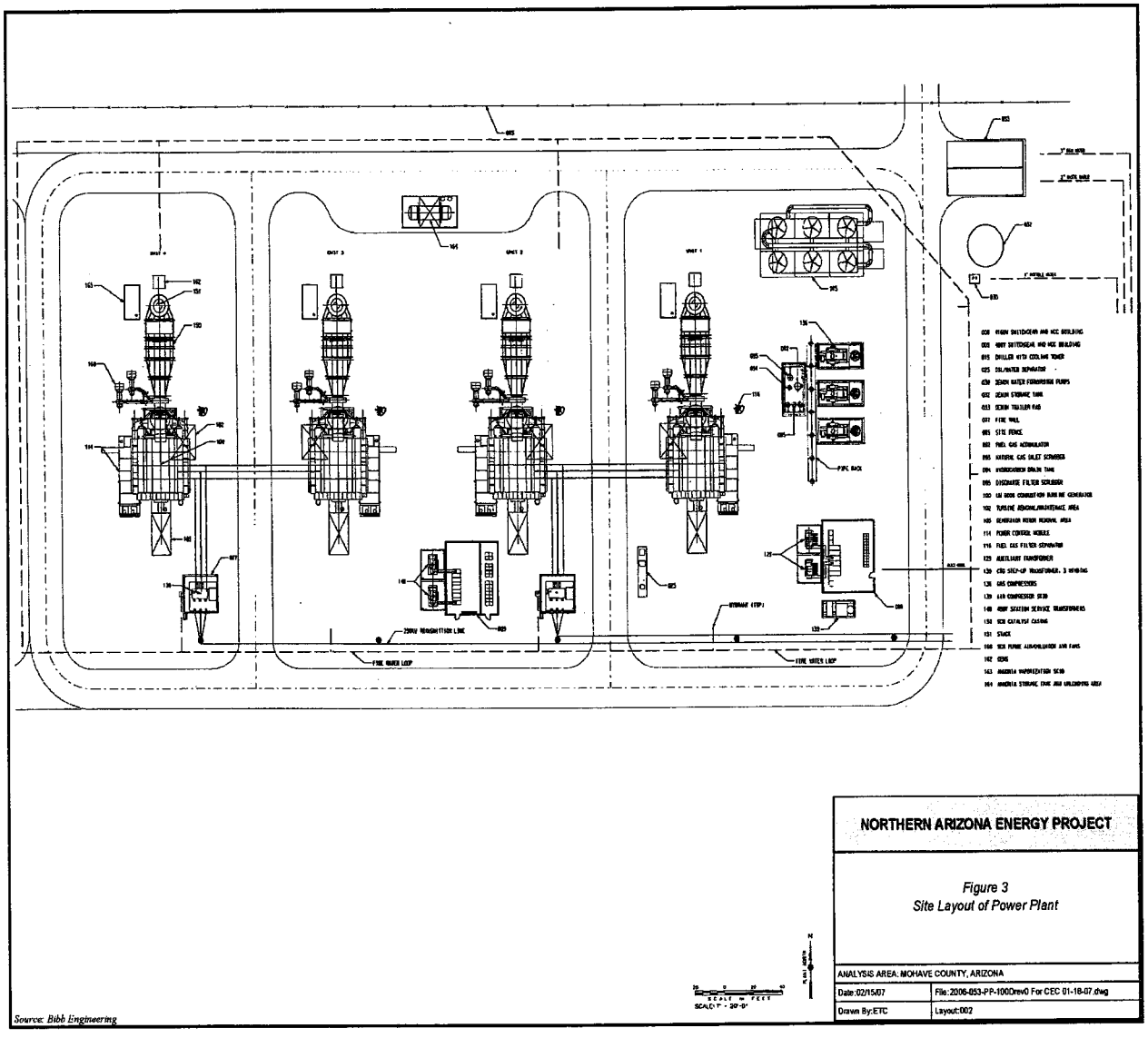


Figure 2-3
Facility Layout Plan



3. EMISSIONS INVENTORY

3.1 Criteria Pollutant Emissions

The estimated combustion turbine performance and emissions calculations sheet is shown in Appendix A. Maximum hourly emissions at full load are the highest during cold temperatures and lowest during hot temperatures. Therefore annual emissions are based on an average temperature around which the turbine operates a majority of the time, while short-term emissions are based on the coldest temperature. Northern Arizona Energy Project's (NAEP) estimated annual emissions are based on emission factors at 100 percent load and an ambient temperature of 90°F. This temperature was selected for a design basis since the units are peaking units and operate during the high load episodes which typically occur on warmer days. The worst-case hourly emissions are based on emission factors at full load and an ambient temperature of 25°F. Table 3-1 shows the estimated maximum hourly and annual emissions of criteria pollutants (i.e., NOx, CO, VOC, SO_x and PM_{10}) from the equipment to be permitted.

Table 3-1
Criteria Pollutant Emissions
Northern Arizona Energy, Mohave County, Arizona

		NOx [1]	CO [1]	SO_2 [1]	VOC [1]	PM_{10}
CTG (each)	ppm	5	6	2.8	5	NA
	lb/hr[2]	7.90	5.77	6.14	2.75	2.7
Chiller	lb/hr					0.16
	ton/yr					0.47
Expected Annual Emissions	ton/yr[3]	39.71	35.90	32.30	15.54	14.78
Requested Annual Emission Limits	ton/yr	40.0	100.0	40.0	40.0	15.0

[1] ppm measured as ppmvd @ 15% O_2
[2] Worst case base load operation, not including startup/shutdown
[3] Based on 10,600 hrs total operation (four units) including startup/shutdown

The Project will be operated within the regulatory annual emission limits for a minor modification to a major source. The Applicant will seek to maximize operating flexibility with respect to full load, part load operating hours, and startup and shutdown emissions within these annual emission limits. Compliance with the limits will be achieved through the use of continuous emission monitors (CEMs) for NOx and CO and approved emission factors for the remainder of the pollutants.

3.2 Hazardous Air Pollutants

In addition to the criteria pollutant emissions discussed in Section 3.1, NAEP will emit small amounts of non-criteria or hazardous air pollutants (HAPs).

NAEP's emissions of non-criteria pollutants are compared to the Federal Clean Air Act (1990) amendments Title III thresholds for major sources of HAPs.

An estimate of NAEP's annual average emissions of non-criteria pollutants is summarized in Table 3-2. These estimates are based on data contained in the EPA's AP-42 document (Volume 1, 5th Ed.). It is important to note that these emission factors were developed using conservative assumptions and may overestimate actual emissions.

Table 3-2
Hazardous Air Pollutant Emissions
Northern Arizona Energy, Mohave County, Arizona

Hazardous	NAEP Total Emissions (4 units)			Griffith Energy[1]	NAEP + Griffith
Air Pollutant	#/hr	lb/yr[1]	Tons/year[2]	Tons/year	Tons/year
1,3-Butadiene	0.0007	1.97	0.001	0.008	0.009
Acetaldehyde	0.0692	183.25	0.092	0.636	0.728
Acrolein	0.0111	29.32	0.015	0.105	0.120
Benzene	0.0207	54.98	0.027	0.199	0.226
Ethylbenzene	0.0553	146.6	0.073	0.515	0.588
Formaldehyde	0.3803	1,007.90	0.504	3.482	3.986
Hexane	0.2975	788.45	0.394	2.710	3.104
Naphthalene	0.0022	5.96	0.003	0.022	0.025
PAHs	0.0038	10.08	0.005	0.037	0.042
Propylene Oxide	0.0501	132.86	0.066	0.613	0.679
Toluene	0.1106	595.58	0.298	2.088	2.386
Xylene	0.0007	293.21	0.147	1.040	1.187
Total, All HAPs			1.625	11.455	13.080

[1] Based on unrestricted operation of 2 CTGs with heat recovery steam generator duct burners and an auxiliary boiler

[2] Based on 10,600 hrs total operation (four units) including startup/shutdown

Since the application is classified as a modification to the existing Griffith, emissions from NAEP must be combined with Griffith in order to determine the entire emissions total for both facilities when determining compliance with the federal HAP thresholds. As shown in Table 3-2, none of the individual HAPs emitted equals or exceeds 10 tpy, and the total of all HAP emissions is less than 25 tpy. Therefore, the Project will not be a major source of HAPs, as defined by the Federal Clean Air Act (1990) amendments.

3.3 Operating Parameters

The following tables provide data for the maximum operating rates for the Project.

Table 3-3
Operating Parameters for Combustion and Power Generation Processes

Process	Heat Input (HHV)		Natural Gas Usage[1]	
	MMBtu/hr	MMBtu/yr[2]	MMscf/hr	MMscf/yr[2]
4 CTGs	1750.0	4.64E+6	1.724	4568.7

[1] Natural gas usage based on a natural gas heat content of 1015 Btu/scf (HHV)
[2] Based on 10,600 hrs total operation (four units) including startup/shutdown

Table 3-4
Operating Parameters for Chiller

Process	Water Circulation Rate	Total Dissolved Solids	Drift Rate
	Gal/min	mg/l	Gpm
Chillers	345	3100	0.10

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4. AIR QUALITY IMPACT ANALYSIS

4.1 Air Quality Modeling Methodology

In accordance with ADEQ's December 2004 Modeling Guidance Document, NAEP submitted an Air Dispersion Modeling Protocol to ADEQ on January 31, 2007 describing the air dispersion modeling techniques NAEP proposed for assessing air quality impacts from the Project. ADEQ approved the methodology presented in the protocol on February 22, 2007. A summary of the approved methodology is described below. The protocol is included in Appendix C of this application.

An assessment of potential impacts on ambient air quality from the Project alone, and in combination with the existing Griffith Energy Project (Griffith), has been conducted using SCREEN3 and Version 3 (Release 02035) of the Industrial Source Complex – Short Term model (ISCST3), both USEPA-approved air quality dispersion models. These models are mathematical descriptions of atmospheric diffusion and dispersion, allowing a pollutant source impact to be calculated at specified locations out to distances up to 50 kilometers. While AERMOD has been adopted as the EPA guideline model to replace ISCST3 after November 9, 2006,* a full meteorological data set has not yet been established for the Project area. Due to this factor and since the Project is a minor source, ADEQ has agreed that the use of ISCST3 is acceptable for this Project.

The impact analysis was used to determine the maximum ground-level impacts of the Project alone, and combined with Griffith. The results were compared with established state and federal ambient air quality standards and PSD significance levels.† If the standards are not exceeded by these potential maximum impacts, then it is demonstrated that no exceedances are expected under any conditions. In accordance with the air quality impact analysis guidelines developed by USEPA (40 CFR Part 51, Appendix W: Guideline on Air Quality Models), the ground-level impact analysis includes the following assessments:

- Impacts in simple, intermediate, and complex terrain;
- Aerodynamic effects (downwash) due to nearby building(s) and structures; and

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* AERMOD was adopted for use November 9, 2005, but a one-year grace period was granted to regulatory agencies to provide time to phase in its substitution for ISCST3, the previous official guideline model for this type of application.

† The Project is not a PSD source, but PSD significance levels are used as convenient thresholds of potential significance for maximum ground-level impacts.

- Impacts from inversion breakup (fumigation).

Simple, intermediate, and complex terrain impacts were assessed for all meteorological conditions that would limit the amount of final plume rise because plume impaction on elevated terrain might cause high ground-level concentrations, especially under stable atmospheric conditions.

Another dispersion condition that can cause high ground-level pollutant concentrations is caused by building downwash. Building downwash can occur when wind speeds are high and a building or structure is in close proximity to the emission stack. This can result in building wake effects where the plume is drawn down toward the ground by the lower pressure region that exists in the lee side (downwind) of the building or structure.

Fumigation conditions occur when the plume is emitted into a low-lying layer of stable air (inversion) that then becomes unstable, resulting in a rapid mixing of pollutants towards the ground. The low mixing height that results from this condition allows little diffusion of the stack plume before it is carried downwind to the ground. Although fumigation conditions rarely last as long as an hour, relatively high ground-level concentrations may be reached during that period. Fumigation tends to occur under clear skies and light winds, and is more prevalent in the summer.

The basic equation used in the ISCST3 modeling assumes that the concentrations of emissions within a plume can be characterized by a Gaussian distribution about the centerline of the plume. Concentrations at any location downwind of a point source such as a stack can be determined from the following equation:

$$C(x,y,z,H) = \left(\frac{Q}{2\pi\sigma_y\sigma_z u}\right) * \left(e^{-1/2(y/\sigma_y)^2}\right) * \left[\left\{e^{-1/2(z-H/\sigma_z)^2}\right\} + \left\{e^{-1/2(z+H/\sigma_z)^2}\right\}\right]$$

where

C	=	the concentration in the air of the substance or pollutant in question
Q	=	the pollutant emission rate
σyσz	=	the horizontal and vertical dispersion coefficients, respectively, at downwind distance x
u	=	the wind speed at the height of the plume center
x,y,z	=	the variables that define the 3-dimensional Cartesian coordinate system used; the downwind, crosswind, and vertical distances from the base of the stack
H	=	the height of the plume above the stack base (the sum of the height of the stack and the vertical distance that the plume rises due to the momentum and/or buoyancy of the plume)

Gaussian dispersion models are approved by USEPA for regulatory use and are based on conservative assumptions (i.e., the models tend to overpredict actual impacts by assuming steady-state conditions, no pollutant loss through conservation of mass, no chemical reactions, etc.). Air dispersion modeling was used to determine if ambient air quality standards would be exceeded, and whether a more detailed modeling procedure would be warranted to determine the potential maximum impact. The following sections describe:

- Screening modeling procedures;
- Refined air quality impact analysis;
- Existing ambient pollutant concentrations; and
- Results of the ambient air quality modeling analyses.

The ISCST3 model is capable of assessing impacts from a variety of source types in areas of simple, intermediate, and complex terrain. The model can account for settling and dry deposition of particulates; area, line, and volume source types; downwash effects; and gradual plume rise as a function of downwind distance. The model is capable of estimating concentrations for a wide range of averaging times (from one hour to one year). Inputs required by the ISCST3 model include model options, meteorological data, source data, and receptor data.

Model options refer to user selections that account for conditions specific to the area being modeled or to the emissions source that needs to be examined. Examples of model options include use of site-specific vertical profiles of wind speed and temperature; consideration of stack and building wake effects; and time-dependent exponential decay of pollutants. The model supplies recommended default options for the user. Except where explicitly stated (such as for building downwash), default values were used. A number of these default values are required for USEPA and ADEQ approval of model results and are listed below.

- Rural dispersion coefficients
- Gradual plume rise
- Stack tip downwash
- Buoyancy induced dispersion
- Calm processing
- Default rural wind profile exponents = 0.07, 0.07, 0.10, 0.15, 0.35, 0.55
- Default vertical temperature gradients = 0.02, 0.035

In addition, missing data were processed with MSGPRO.

ISCST3 uses hourly meteorological data to characterize plume dispersion. The representativeness of the data depends on the proximity of the meteorological monitoring site to the area under consideration, the complexity of the terrain, the exposure of the

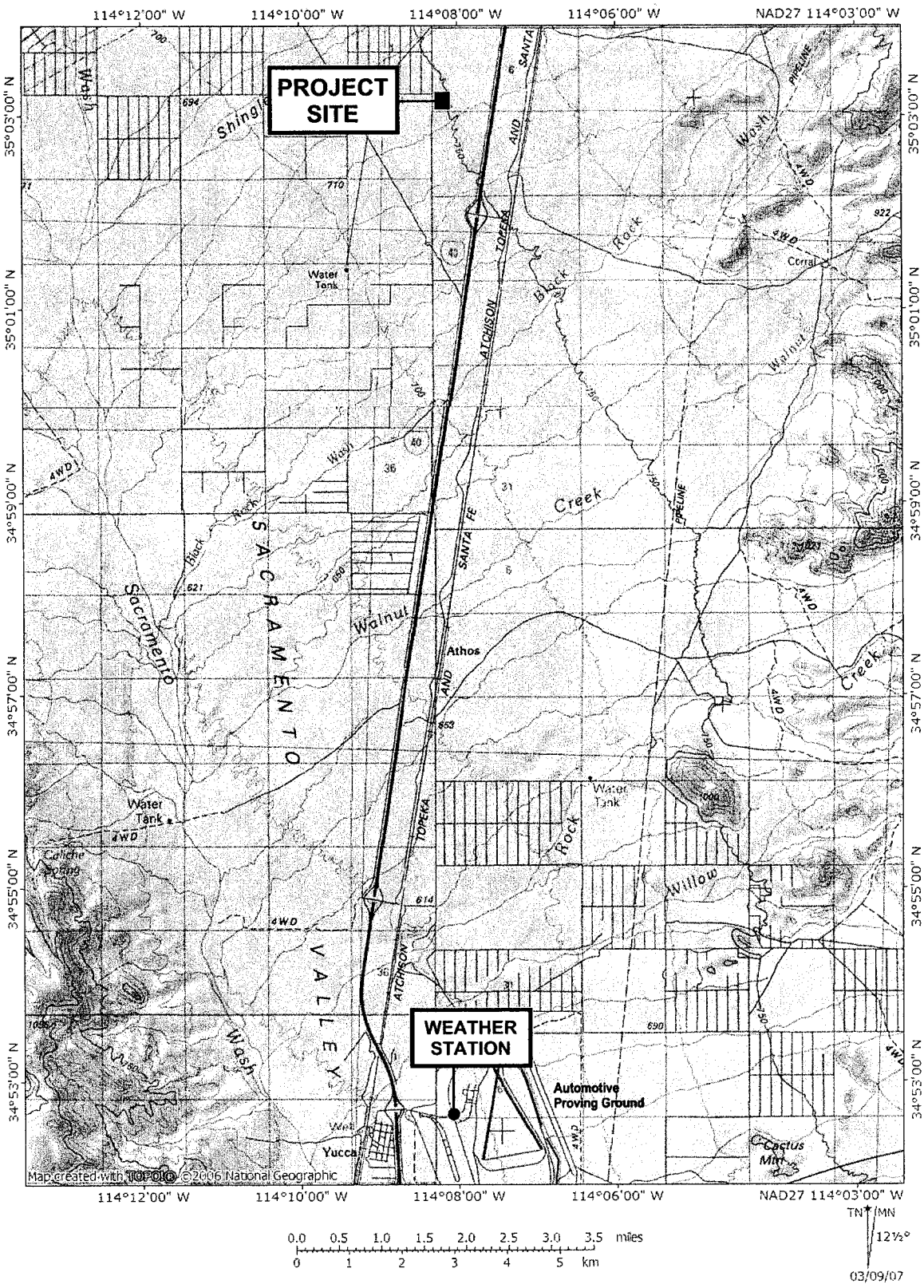
meteorological monitoring site, and the period of time during which the data are collected. The surface meteorological data used in this analysis were collected during 1997 at Ford Motor Company's Arizona Proving Ground facility, which is located approximately 12 miles south of the Project Site. This one-year data set is representative of meteorological conditions at the Project Site and meets the requirements of the USEPA "On-Site Meteorological Program Guidance for Regulatory Model Applications" (EPA-450/4-87-013, August 1995). This data set was selected for consistency with previous modeling of the existing Griffith.

The area surrounding the Project Site can be characterized, for dispersion purposes, as rural. The area within three kilometers of the Project Site includes undeveloped desert within the I-40 Industrial Corridor and surrounding properties. The nearest residence is approximately 2.5 miles (4 km) northwest of the Project Site. In accordance with the Auer land use classification methodology (USEPA's *"Guideline on Air Quality Models"*), land use within the area circumscribed by a three km radius around the modified facility is greater than 50 percent rural. Therefore, in the modeling analyses supporting the permitting of the facility, rural dispersion coefficients have been assigned.

Representativeness has also been defined in the *"Workshop on the Representativeness of Meteorological Observations"* (Nappo et al., 1982) as "the extent to which a set of measurements taken in a space-time domain reflects the actual conditions in the same or different space-time domain taken on a scale appropriate for a specific application." Representativeness was assured because the meteorological monitoring and project sites are climatologically similar.

The large-scale topographic features that influence the meteorological monitoring site also influence the proposed project site in the same manner. Additional discussion of the selection of the meteorological data set is provided in the modeling protocol, included in Appendix C to this application.

Figure 4-1
Locations of Facility and Meteorological Monitoring Station



For the purposes of modeling, a stack height beyond what is required by Good Engineering Practices (GEP) is not allowed. However, this requirement does not place a limit on the actual constructed height of a stack. GEP as used in modeling analyses is the height necessary to ensure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies, or wakes that may be created by the source itself, nearby structures, or nearby terrain obstacles. In addition, the GEP modeling restriction assures that any required regulatory control measure is not compromised by the effect of that portion of the stack that exceeds the GEP. The USEPA guidance ("Guideline for Determination of Good Engineering Practice Stack Height," Revised 6/85) for determining GEP stack height is as follows:

Hg = H + 1.5L, where
Hg = Good Engineering Practice stack height, measured from the ground-level elevation at the base of the stack
H = height of nearby structure(s) measured from the ground-level elevation at the base of the stack
L = lesser dimension, height or maximum projected width, of nearby structure(s)

In using this equation, the guidance document indicates that both the height and width of the structure are determined from the frontal area of the structure, projected onto a plane perpendicular to the direction of the wind.

For each of the CTG stacks, the nearby (influencing) structures are the CTG enclosures, which are 51 feet (15.54 m) high and 70 feet (21.33 m) long. Thus H = 51 ft and L = 51 feet, Hg = 51 ft + (1.5 * 51 ft) = 127.5 ft, and the proposed stack height of 85 feet does not exceed GEP stack height.

For regulatory applications, a building is considered sufficiently close to a stack to cause wake effects when the downwind distance to the stack is not more than five times the greater of the height or the projected width of the building.

Table 4-1 includes a list of structures that were included in the BPIP analysis for NAEP. Modeling input files from the original modeling analysis for Griffith were used for the combined analysis. The Griffith inputs included a BPIP file which provided the downwash analysis for structures at Griffith, therefore, no additional information on buildings at Griffith was required and Table 4-1 includes only new structures associated with the Project.

Table 4-1 Parameters for Significant Structures at the Northern Arizona Energy Project	
Structure	Dimensions (feet – W x L x H)
Chiller	71.5'W x 37.4'L x 43.1'H
SCR Catalyst Casing	24.3'W x 29.5'L x 43'H
CTG Transition	24.3'W x 21.5'L x 21.5'H
CTG Housing	48.9'W x 63'L x 51'H
Compressor Buildings	39.3'W x 60.7'L x 15'H

4.2 Screening Procedure

To assure that the impacts analyzed were for maximum emission levels and worst-case dispersion conditions, a screening procedure was used to determine the inputs to the impact modeling. The screening procedure analyzed the CTG operating conditions that would result in the maximum impacts on a pollutant-specific basis. The operating conditions examined in this screening analysis, along with their exhaust and emission characteristics, are shown in Appendix B, Table B-2. These operating conditions represent maximum and minimum CTG loads (100 percent and 50 percent) at expected maximum, average and minimum ambient operating temperatures (113, 90 and 25°F).* The effects of evaporative cooling are also evaluated in the screening analysis.

The operating conditions were screened for maximum ambient impact using ISCST3 model and the meteorological data described above. The stack parameters and emission rates for the maximum-impact operating conditions were used in the refined modeling analyses to evaluate the modeled impacts of the entire Project for the corresponding pollutant and averaging period.

4.3 Refined Air Quality Impact Analysis: Criteria Pollutants

The operating conditions and emission rates used to model ambient air quality impacts from the Project are summarized in Table 4-2, and from Griffith in Table 4-3. The complete modeling input for each pollutant and averaging period is shown in Appendix B.

* Ambient temperature affects turbine performance through the density of the intake air. When ambient temperature is lower, the air is denser and more fuel can be burned by the turbine at the same fuel to air ratio, increasing turbine output. The minimum design temperature used in this analysis, 25 °F, was used to define the expected maximum hourly heat input and turbine output. The applicant will accept a permit condition limiting the hourly heat input to each CTG of 436 MMBtu/hr (HHV). This limiting condition will assure that CTG emissions stay at or below the levels evaluated in this application even if ambient temperatures are below 25 °F.

Table 4-2 Emission Rates and Stack Parameters for Northern Arizona Energy Project at 90°F			
	CTG1 – CTG4		Chiller Cells 1-6
Emission Rates, g/s	Base Load	50% Load	
-- NOx	0.99	0.60	---
-- SO_2	0.77	0.47	---
-- CO	0.72	0.44	---
-- PM_{10}/ $PM_{2.5}$	0.34	0.34	0.0033
Stack Height, m	25.91		13.72
Stack Diameter, m	3.05		3.66
Exhaust Temp, deg K	716.2	656.3	305.6
Exhaust Velocity, m/s	40.15	29.03	6.06

Table 4-3 Emission Rates and Stack Parameters for Griffith at 90°F				
	CTG1 & CTG2	Auxiliary Boiler	Cooling Tower Cells 1-8	Chiller Cells 1-6
Emission Rates, g/s				
-- NOx	3.604	0.439	---	---
-- SO_2	0.718	0.011	---	---
-- CO	12.417	0.262	---	---
-- PM_{10}	3.556	0.024	0.047	0.015
Stack Height, m	39.62	9.14	18.29	10.67
Stack Diameter, m	5.79	0.61	9.144	6.401
Exhaust Temp, deg K	349.7	421.9	310.8	310.8
Exhaust Velocity, m/s	11.88	17.53	8.17	4.94

A nested grid was developed to fully represent the maximum impact area(s). This grid had 25-meter resolution along the Project Property boundary in a single tier of receptors composed of four segments extending out to 100 meters from the Project Property boundary, 100-meter resolution from 100 meters to 1,000 meters, 250-meter spacing out to 5 km, and 500 meter spacing out to 10 km. Concentrations within the Project Property were not calculated.

Figures 4-2 and 4-3 show the receptor grids around both facilities and full receptor grid respectively.

Receptor and source base elevations were determined from USGS Digital Elevation Model (DEM) data using 7½-minute format (10- to 30-meter spacing between grid nodes). All coordinates were referenced to UTM North American Datum 1927 (NAD27), Zone 11. The ISCST3 receptor elevations were interpolated among the DEM nodes.

Figure 4-2
Fenceline Receptor Grids

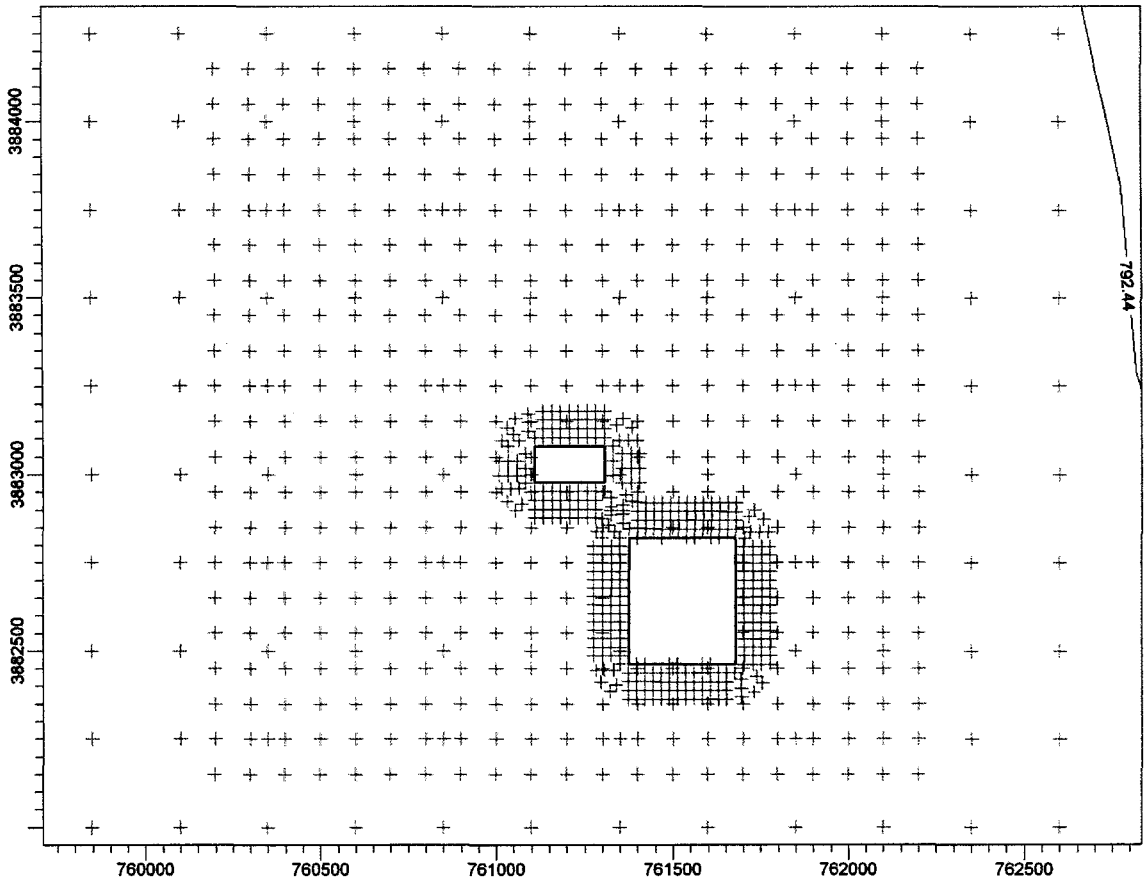
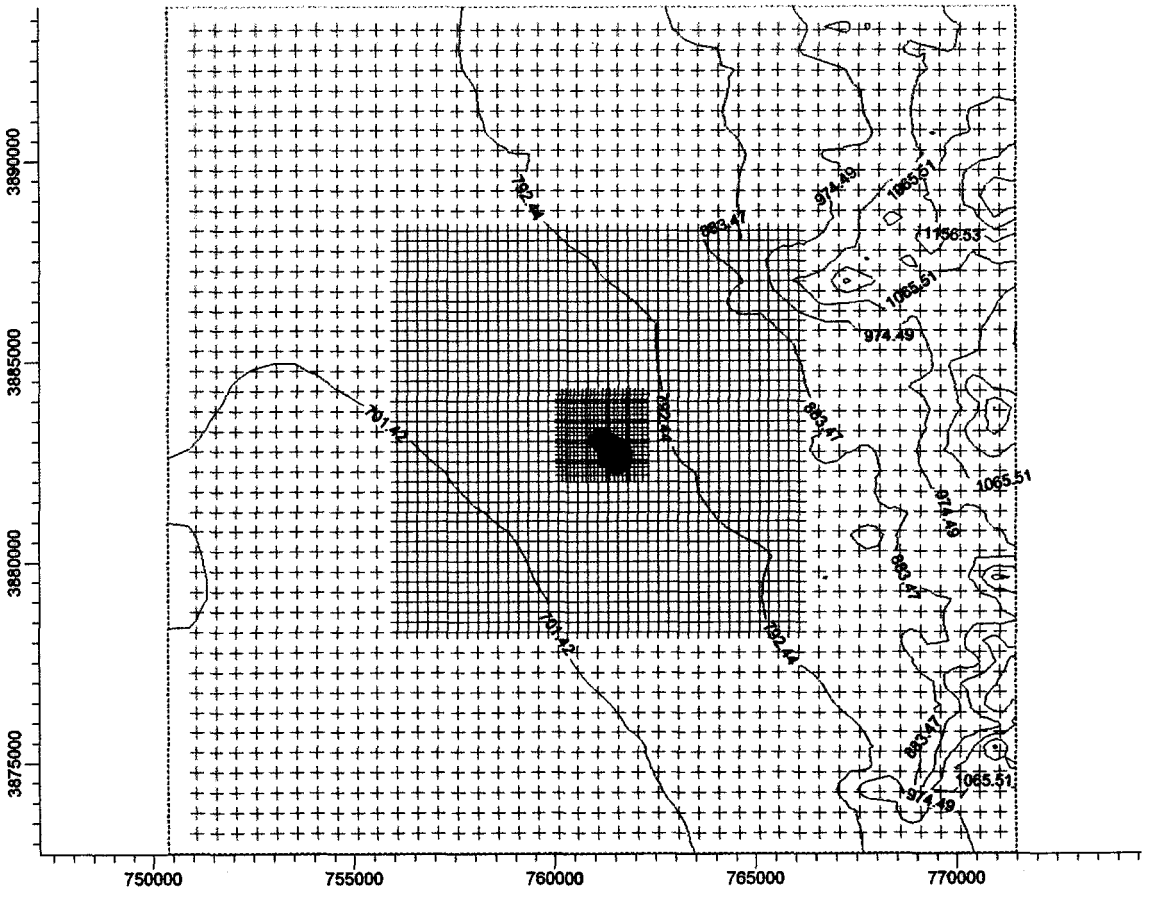


Figure 4-3
Full Receptor Grid



4.4 Specialized Modeling Analyses

Fumigation Modeling

Fumigation occurs when a stable layer of air lies a short distance above the release point of a plume and unstable air lies below. Under these conditions, an exhaust plume may be drawn to the ground, causing high ground-level pollutant concentrations. Although fumigation conditions rarely last as long as one hour, relatively high ground-level concentrations may be reached during that time.

The SCREEN3 model was used to evaluate maximum ground-level concentrations for short-term averaging periods (24 hours or less). Guidance from the USEPA* was followed in evaluating fumigation impacts. Because SCREEN3 is a single-source model, only one turbine was modeled. Fumigation impacts for the turbines were predicted to

* USEPA-454/R-92-019, "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised."

occur at about 19 km from the facility. This analysis, which is shown in more detail in Appendix B, showed that impacts under fumigation conditions are expected to be lower than the maximum concentrations calculated by ISCST3 under downwash conditions.

4.5 Results of the Ambient Air Quality Modeling Analyses

The maximum impacts calculated from each of the modeling analyses described above are summarized in Table 4-4.

Table 4-4
Maximum Potential Impact From Refined Modeling

Pollutant	Averaging Time	Modeled Concentration (µg/m3)		
		NAEP		Combined
		ISCST3	Fumigation	NAEP + Griffith
NOX	Annual	0.091	n/a	8.38
SO_2	3-hour	6.40	2.30	8.28
	24-hour	0.92	0.89	2.37
	Annual	0.070	n/a	0.31
CO	1-hour	12.5	2.1	590.4
	8-hour	2.47	1.53	93.9
PM_{10}/ $PM_{2.5}$	24-hour	0.74	0.56	13.9
	Annual	0.039	n/a	1.42

4.6 Ambient Air Quality Impacts

To determine a project's air quality impacts, the modeled concentrations are added to the maximum background ambient air concentrations and then compared to the applicable ambient air quality standards.

Background ambient air quality data for the project area were provided by the ADEQ air assessment section and are presented in Table 4-5. Ambient NO_2, SO_2, PM_{10}, $PM_{2.5}$, and CO data are collected at various monitoring stations around Mohave County and have been deemed adequate for use in evaluating impacts from the NAEP.

Maximum ground-level impacts due to operation of the Project are shown together with the ambient air quality standards in Table 4-6. Using the conservative assumptions described earlier, the results indicate that the Project will not cause or contribute to violations of any state or federal air quality standards.

Table 4-5 ADEQ Background Concentrations for Northern Arizona Energy Project		
Pollutant	Averaging Time	Background Value (µg/m3)
NO2[a]	Annual	4
SO2[b]	3-hour 24-hour Annual	246 52 6
CO[c]	1-hour 8-hour	582 582
PM10[d,e]	24-hour Annual	46 14

[a] Long-term average value (0.002 ppm) of several monitors located near power plants in rural areas of Arizona.
[b] Maximum values over 3-year period from Bullhead City – SCE monitoring station (Mohave County).
[c] Typical continental ambient CO background value (0.5 ppm) used in most regional models.
[d] Average maximum values over 3-year period from Kingman – Praxair monitoring station (Mohave County).
e No monitoring background levels provided for $PM_{2.5}$

Table 4-6 Modeled Maximum Project Impacts with Griffith Energy Facility							
						% of Standard	
Pollutant	Averaging Time	Maximum Facility Impact Combined µg/m3	Background (µg/m3)	Total Impact (µg/m3)	Federal Standard (µg/m3)	Modeled Facility Impact	Total Impact
NO2	Annual	8	4	12	100	8%	12%
SO2	3-hour 24-hour Annual	8 2 0.3	246 52 6	254 54 6	1300 365 80	1% 1% <1%	20% 15% 8%
CO	1-hour 8-hour	590 94	582 582	1,172 676	40,000 10,000	2% 1%	3% 7%
PM10	24-hour Annual	14 1	46 14	60 15	150 50	9% 3%	40% 31%

4.7 Evaluation of Compliance with the Arizona Ambient Air Quality Guidelines

The procedure described above for determining criteria pollutant impacts was also followed in determining the ambient impacts of noncriteria pollutants for demonstrating compliance with the Arizona Ambient Air Quality Guidelines (AAAQG). These guidelines define allowable one-hour, 24-hour, and annual average concentrations for noncriteria pollutants to protect public health. Tables 4-7 and 4-8 summarizes the results

of the analysis for the NAEP and the combined facilities respectively. The addition of the NAEP project will not cause or contribute to an exceedence of any of the AAAQG's

Table 4-7
Summary of AAAQG Modeling Results for NAEP Facility

AAAQG Pollutant	1-Hour Impact ($\mu g/m^3$)	1-Hour AAAQG ($\mu g/m^3$)	24-Hour Impact ($\mu g/m^3$)	24-Hour AAAQG ($\mu g/m^3$)	Annual Impact ($\mu g/m^3$)	Annual AAAQG ($\mu g/m^3$)
1,3-Butadiene	3.88E-04	7.20E+00	2.63E-05	1.90E+00	2.09E-06	6.70E-02
Acetaldehyde	3.61E-02	2.30E+03	2.44E-03	1.40E+03	1.95E-04	5.00E-01
Acrolein	5.78E-03	6.70E+00	3.91E-04	2.00E+00	--	--
Ammonia			8.27E-01	1.40E+02		
Benzene	1.08E-02	6.30E+02	7.33E-04	5.10E+01	5.84E-05	1.40E-01
Ethylbenzene	2.89E-02	4.50E+03	1.96E-03	3.50E+03	--	--
Formaldehyde	1.99E-01	2.00E+01	1.34E-02	1.20E+01	1.07E-03	8.00E-02
Hexane	1.55E-01	5.30E+03	1.05E-02	1.40E+03		
Napthalene	1.17E-03	6.30E+02	7.94E-05	4.00E+02	--	--
Propylene Oxide	2.62E-02	1.50E+03	1.77E-03	4.00E+02	1.41E-04	2.00E+00
Toluene	1.17E-01	4.70E+03	7.94E-03	3.00E+03	--	--
Xylenes	5.78E-02	5.50E+03	3.91E-03	3.50E+03	--	--

Table 4-8
Summary of AAAQG Combined Modeling Results for NAEP and Griffith

AAAQG Pollutant	1-Hour Impact ($\mu g/m^3$)	1-Hour AAAQG ($\mu g/m^3$)	24-Hour Impact ($\mu g/m^3$)	24-Hour AAAQG ($\mu g/m^3$)	Annual Impact ($\mu g/m^3$)	Annual AAAQG ($\mu g/m^3$)
1,3-Butadiene	1.78E-03	7.20E+00	2.90E-04	1.90E+00	2.00E-05	6.70E-02
Acetaldehyde	1.67E-01	2.30E+03	2.76E-02	1.40E+03	1.99E-03	5.00E-01
Acrolein	2.76E-02	6.70E+00	4.63E-03	2.00E+00	--	--
Ammonia			1.69E+00	1.40E+02		
Benzene	6.57E-02	6.30E+02	1.16E-02	5.10E+01	1.04E-03	1.40E-01
Ethylbenzene	1.51E-01	4.50E+03	2.58E-02	3.50E+03	--	--
Formaldehyde	9.46E-01	2.00E+01	1.57E-01	1.20E+01	1.12E-02	8.00E-02
Hexane	7.26E-01	5.30E+03	1.20E-01	1.40E+03		
Napthalene	8.15E-03	6.30E+02	1.46E-03	4.00E+02	--	--
Propylene Oxide	4.45E+00	1.50E+03	2.37E-01	4.00E+02	3.77E-02	2.00E+00
Toluene	6.12E-01	4.70E+03	1.04E-01	3.00E+03	--	--
Xylenes	3.20E-01	5.50E+03	5.52E-02	3.50E+03	--	--

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5. APPLICABLE REQUIREMENTS

This section describes those state and federal regulatory requirements that applicable to the Project.

5.1 Federal Requirements

Certain federal regulations related to criteria pollutant emissions are potentially applicable to emission units at the NAEP. These regulations are reviewed in the following sections, and applicability determinations are provided along with their rationale.

5.1.1 Ambient Air Quality Standards

Table 5.1 shows the national ambient air quality standards. The primary and secondary air quality standards are the ambient concentrations of pollutants that are necessary to protect public welfare. Arizona does not have separate ambient air quality standards for criteria pollutants.

Emissions of NOx, SOx, CO and PM_{10} from the Project were assessed relative to compliance with National Ambient Air Quality Standards listed below. Results of this analysis are included in Section 4 – Air Quality Impact Assessment of this application. The analysis demonstrates that the Project, either alone or in combination with Griffith, will not cause or contribute to violations of any national ambient air quality standard.

Table 5-1 National Ambient Air Quality Standards			
Pollutant	Averaging Time	Primary Standard $\mu g/m^3$	Secondary Standard $\mu g/m^3$
SO_2	Annual[1]	80 (0.030 ppm)	-
	24-Hour[2]	365 (0.14 ppm)	-
	3-Hour[2]	-	1,300 (0.5 ppm)
PM_{10}	Annual[1]		
	24-Hour[2]	150	150
$PM_{2.5}$	Annual[1]	15	15
	24-Hour[2]	35	35
CO	8- Hour[2]	10,000 (9 ppm)	-
	1- Hour[2]	40,000 (35 ppm)	-
Ozone	8- Hour[3]	157 (0.08 ppm)	157 (0.08 ppm)
NO_2	Annual[1]	100 (0.05 ppm)	100 (0.05 ppm)
Lead	Quarter[1]	1.5	-

$\mu g/m^3$ = micrograms per cubic meter
ppm = parts per million
1. Arithmetic mean.
2. Block average.
3. Rolling average.

5.1.2 Arizona Performance Standards for New Stationary Sources

The Arizona performance standards for new stationary sources are listed in Article 9 of the Arizona air quality regulations. Arizona has incorporated by reference the federal new source regulations listed in Section 5.3 of this application.

5.1.3 Attainment, Nonattainment, and Unclassifiable Area Designations

The Project Site is within the Arizona Air Quality Control Region that encompasses Mohave, LaPaz, and Yuma Counties. This area is in attainment for all pollutants except for PM_{10}. The portion of Mohave County west of the Black Mountains is in non-attainment for PM_{10}. The Project will be located in the portion of Mohave County that is in attainment for PM_{10}.

5.2 Prevention of Significant Deterioration (PSD)

As previously noted, while the Project will be a minor source, it will be classified as a minor modification at an existing PSD major stationary source (Griffith). The addition of this equipment will result in emissions less than the significance threshold for each regulated pollutant (see Table 5.2). Therefore the Project is not subject to further PSD review pursuant to 40 CFR 52.21.

Table 5-2 Northern Arizona Energy Facility Source Classification Data					
	NOx (t/yr)	**CO (t/yr)**	**SO_2 (t/y)**	**VOC (t/y)**	**PM_{10} (t/y)**
Annual Emissions – NAEP	39.7	35.9	32.3	15.5	14.8
Major Source Threshold Emissions	100.0	100.0	100.0	100.0	100.0
PSD Significant Emissions Threshold	40.0	100.0	40.0	40.0	15.0

5.3 New Source Performance Standards

The New Source Performance Standards (NSPS) are codified Title 40 Code of Federal Regulations (CFR) Part 60. Specific subparts to the NSPS address a variety of sources; however, only one NSPS is applicable to the emissions from the new CTGs described in this permit application. The CTGs will comply with the standards of 40 CFR 60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines). This regulation has been incorporated by reference into the Arizona air quality regulations.

A summary of the regulation is presented below.

Table 5-3 Summary of NSPS Requirements (requirements shown for each unit)	
Regulation	**40CFR60.KKKK**
NAEP Source	**CTG**
Applicability	≥ 10MMBtu/hr
SO_x Limit	0.060 lb/MMBtu
NOx Limit	25 ppm @ 15% O_2
Continuous monitoring	**Monitor fuel sulfur content as required **CEM operates all times including start-up, shut-down, malfunctions, emergencies, except during monitoring equipment breakdown, repairs, etc. **At least 2 points/hr for 1 hour averages
Reporting	**Emergency actions **Submit information on date of construction, anticipated startup, actual startup, design heat capacity, and fuels to be combusted

5.4 National Emission Standards for Hazardous Air Pollutants

The National Emission Standards for Hazardous Air Pollutants (NESHAPS) are contained within 40 CFR Parts 61 and 63. Specific subparts of the NESHAPS address a variety of sources; however, as discussed in Section 3.2, the total HAPS emissions from the four (4) NAEP CTGs and the existing Griffith are well below the Major Source thresholds of 10 tons/year of a single HAP (highest – 3.99 ton/yr) and 25 tons/year (total-13.1 ton/yr) of all HAPS collectively. Consequently, the Project is a minor source for HAPS and is exempt from 40 CFR 61 and 63 requirements.

5.5 Compliance Assurance Monitoring

It is anticipated that specific emission and parameter monitoring requirements will be included to demonstrate compliance with applicable requirements identified in the Title V Operating Permit. With respect to the Compliance Assurance Monitoring (CAM) rules (40 CFR 64), the new CTGs are not subject to the CAM rules since they will be monitoring emissions under 40 CFR 60 Subpart KKKK.

5.6 Chemical Accident Prevention Provisions (1990 CAA Title III)

40 CFR Part 68, Chemical Accident Prevention Provisions, is a federal regulation designed to prevent the release of hazardous materials in the event of an accident and minimize impacts when releases do occur. The regulation contains a list of substances and threshold quantities for determining applicability of the rule to a facility. If a facility stores, handles or processes one or more substances on this list and at a quantity equal to or greater than specified in the regulation, the facility must prepare and submit a risk management plan (RMP). If a facility does not have a listed substance on-site, or the quantity of a listed substance is below the applicability threshold, the facility does not have to prepare an RMP. However, it must still comply with requirements of the general duty provisions in Section 112(r)(1) of the 1990 Clean Air Act Amendments if it has any regulated substance or other extremely hazardous substance on-site. The general duty provision is as follows:

> *"The owners and operators of stationary sources producing, processing, handling and storing [a chemical in 40 CFR Part 68 or any other extremely hazardous substance] such substances have a general duty [in the same manner and to the same extent as the general duty clause in the Occupational Safety and Health Act (OSHA)], to identify hazards which may result from .. such releases using appropriate hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur."*

Table 5-4 lists the hazardous substances stored at NAEP and Griffith, and the applicable threshold quantity. Griffith Energy has an existing Risk Management Plan for the storage of anhydrous ammonia. NAEP will not be storing any chemicals which exceed the

threshold quantities, therefore the existing RMP will not need to be revised. The Applicant will maintain awareness of hazard issues and meet the goals of the above-listed general duty provisions.

Table 5-4
Hazardous Substances Present at NAEP and Griffith

Regulated Hazardous Substance (40 CFR Part 68)	NAEP	Griffith	Threshold	RMP Required
Ammonia (conc 20% or greater)	10,000 gal, 19% concentration	30,000 gal, 19% concentration	20,000 lb, ≥20% concentration	No
Hydrochloric Acid (conc 37% or greater)	N/A	2 x 6,000 gal 35% concentration	15,000 lb ≥37% concentration	No
Ammonia (anhydrous)	N/A	144,000 lb	10,000 lb	Yes

5.7 Acid Rain Program

The Project is subject the federal Acid Rain Permitting Program (40 CFR Part 72). Northern Arizona Energy, LLC has submitted a Certificate of Representation identifying the Designated Representative for the Project to EPA. The Acid Rain permit application is included as Appendix E.

5.8 Operating Permit Program

Since Griffith is a major source (100 tons/year) of criteria pollutants, it is subject to the requirements for federal operating permits under 40 CFR Part 70. As such, the Project is also subject to the Title V Operating Permit Program. With the submission of this application the NAEP is in compliance with applicable portions of 40 CFR 70.

5.8.1 Insignificant Sources

Several insignificant sources and trivial activities related to electric utilities may occur onsite. General activities which fall under the definitions of "Insignificant Activities" pursuant to AAC R18-2-101(57) and/or "Trivial Activities" are defined in A.A.C. R18-2-101 (119). The ADEQ has also promulgated a standardized list of insignificant sources for purposes of the Title V Operating Permit. Table 5.5 lists the insignificant sources and trivial activities that relate to NAEP and provides a justification as to why they are insignificant or trivial:

Table 5-5 Insignificant Sources	
Source Description	**Justification**
Turbine Compartment Ventilation Exhaust Vents	Vent the operating compartments of the combustion turbines. May vent insignificant amounts of VOCs from turbine lube oils.
Compressed Air Systems	Vent only air. No pollutant emissions.
Turbine Lube Oil Vapor Extractors and Lube Oil Mist Eliminator Vents	These vents allow for the removal of water vapor and lube oil vapor/mist from the lube oil system. Insignificant amounts of VOCs are emitted from these vents.
Sulfuric Acid Storage Tank Vents	A sulfuric acid storage tank will be used as part of the water treatment/demineralization/pH control system. Venting will occur during tank filling and over pressurization. Sulfuric acid has a low vapor pressure and therefore emissions from this source are expected to be insignificant.
Welding Equipment	Emissions from welding activities are generated during routine maintenance and will be insignificant
Water Wash System Storage Tank Vents	This is an on-line system that periodically washes the combustion turbine blades. The tanks contain water, soap detergent, and a water/soap detergent solution thus they are not expected to be a source of air pollution.
Fuel Purge Vents	Insignificant emissions of VOCs are expected from the fuel purge vents during normal operations.
Oil/ Water Separator Waste Oil Collection Tank Vents	Underground tanks are used for the collection of waste oils during leaks or spills. These tanks are used infrequently thus emissions from their vents are expected to be insignificant.

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6. CONTROL TECHNOLOGY OVERVIEW

NAEP is proposing emission limits and annual emission caps and will maintain Project emissions below major modification thresholds. Pursuant to AAC §R18-2-306.01, these limits must be permanent, quantifiable and otherwise enforceable as a practical manner.

The air pollution control equipment anticipated for the Project consists of a water injection combined with a selective catalytic reduction (SCR) system for NOx emissions control and an oxidation catalyst system for CO and VOC emissions control for each CTG unit. In addition, high efficiency drift eliminators will be used on the inlet air chiller module.

NAEP will limit the fuels burned in the CTGs to natural gas, a clean burning fuel. By contrast, burning of liquid fuels in the CTGs would result in greater criteria pollutant emissions than if the units burned only gaseous fuels. This measure acts to minimize the formation of all criteria air pollutants.

NOx emissions from the CTGs will be controlled with the use of low NOx emitting equipment and post-combustion controls. The CTGs are configured to utilize water injection to control NOx emissions. In addition, the Project has included SCR system to reduce NOx emissions to 5 ppmvd NOx, corrected to 15 percent O_2 on a three-hour average basis. This is consistent with permitted emission limits for other similar turbine projects in Arizona.

The SCR system consists of catalyst modules located between the turbine, an ammonia storage tank, and ammonia transfer, vaporization, and injection equipment. The performance of the SCR system is controlled primarily by comparing the continuously monitored NOx levels in the CTG stack to the emission level set point (typically an outlet concentration level slightly lower than the permitted emission limit). Depending on the measured NOx levels, the SCR control system will increase or decrease the amount of ammonia being injected ahead of the catalyst in order to increase or decrease the NOx control efficiency.

CO emissions will controlled by using oxidation catalysts to reduce CO emissions to 6.0 ppmvd, corrected to 15 percent O_2. This is consistent with permitted emission limits for other similar turbine projects in Arizona.

VOC emissions will be controlled by use of good combustion practices in the CTGs. Oxidation catalyst will also provide some reduction in VOC emissions. VOC emissions

leaving the stacks will not exceed 5.0 ppmvd, corrected to 15 percent oxygen. This level of emissions is consistent with recent BACT determinations for similar projects in Arizona.*

Control for PM_{10} is best combustion practices and the use of gaseous fuels. The CTGs will burn exclusively pipeline quality natural gas with an expected maximum sulfur content of 5 grains per 100 scf, which will result in minimal SO_2 emissions.

Drift eliminators will be installed in each chiller module cell as a means to reduce the amount of water entrained as droplets in the exhaust air from the towers. Performance (in terms of drift elimination rate) is generally a function of the device design. These eliminators are static, physical devices that are installed within the chiller module structures and their performance is not controlled or monitored by any physical devices.

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* Although the Project will be equipped with oxidation catalysts, no VOC control effectiveness has been assumed.

7. COMPLIANCE AND MONITORING

7.1 Test Methods for Determining Compliance

Performance compliance of the SCR and oxidation catalyst is anticipated to be determined on the basis of new source stack testing followed by continuous monitoring of NOx and CO emissions. Because testing for cooling tower drift eliminator performance is very difficult to accomplish and is seldom performed, a compliance determination method for this control equipment is not being proposed. Compliance with drift eliminator efficiency will be demonstrated through vendor guarantees.

Measurement of SCR and oxidation catalyst control efficiencies or ammonia injection rate is not necessary for compliance purposes because required performance of the control system is determined by monitoring the resulting NOx and CO emission level from the CTG stacks.

7.2 Rated Operating Efficiency

The SCR control efficiency rate will need to be approximately 85 percent based on reduction of a CTG outlet NOx level of 25 ppm down to the anticipated NOx emission limit of 5 ppm. However, the actual control efficiency can be greater in order to achieve a lower NOx emission level set point to provide some margin under the actual emission limit; the control efficiency may be lower under conditions when the CTG exhaust NOx concentration is lower than 25 ppm. The SCR will be designed to meet the anticipated emission limit of 5 ppm under varying operating conditions. Similarly, the oxidation catalyst for CO control will be designed to provide a control efficiency in excess of 82% to allow for additional capacity to meet the anticipated emission limit of 6 ppm under varying operating conditions. However, as is the case with the SCR control system, the actual efficiency of the oxidation catalyst system will vary.

7.3 Data Necessary to Establish Required Efficiency

As stated above, specific control efficiency requirements are not anticipated for the air pollution control equipment. The performance of the SCR and oxidation catalyst will be monitored and controlled as necessary to maintain compliance with the NOx and CO emission limits proposed for each CTG. Thus, a specific control efficiency demonstration is not necessary or appropriate. Stack monitoring data will be utilized to

determine compliance with required SCR and oxidation catalyst performance. Setting a control efficiency standard for the chiller module drift eliminators and determining compliance with such a requirement is also not necessary or appropriate.

7.4 Evidence that Operation Will Not Violate Air Quality Standards

The emission levels used in the air dispersion modeling analysis to demonstrate the Project will not cause or contribute to any violations of the NAAQS and AAAQG include the operation of the air pollution control equipment described above. For example, the NOx emission rate used in the dispersion modeling analysis was based on the anticipated operation of the SCR system. CTG stack emissions monitoring data and new source stack test results will indicate operation of the air pollution control equipment, compliance with the emission limits, and resulting compliance with allowable air quality impact levels.

7.5 Applicable Requirements which are the Basis of the Certification

The basis of compliance certification for NAEP will be those regulations listed as applicable requirements in Section 5 of this application.

7.6 Compliance Methods and Schedule

This section provides the proposed methods for which compliance with applicable requirements will be demonstrated. This section is organized by source.

7.6.1 CTG

Each CTG will use the following method(s) for determining compliance with the applicable requirements:

- Continuous Emission Monitoring (CEM):
  - Pollutant(s) NOx, CO
- Initial stack test pollutant(s):
  - VOC, PM, Opacity
- Compliance certification reports will be submitted to the Department according to the following schedule:
  - Start date: 60 days after successful completion of new source compliance testing, and every 12 months thereafter.

- Compliance monitoring reports will be submitted to the Department according to the following schedule:
  - Start date: 90 days after successful completion of new source compliance testing and every 3 months thereafter.

PM_{10} limits will be met through use of good combustion practices. Good combustion practices in this case shall be the use of adequate excess air and good air/fuel mixing during combustion.

SOx limits will be met through the use of natural gas with a sulfur content less than 5 grains per 100 scf.

NOx limits will be met by use of water injection and selective catalytic reduction (SCR) systems when firing natural gas.

CO and VOC limits will be met using oxidation catalysts and good combustion practices. Good combustion practices in this case shall be the use of adequate excess air and good air/fuel mixing during combustion.

The permittee will submit to the Department, within 30 days after the end of each calendar quarter, a report that contains the information and data listed in Special Conditions of the permit.

Each CTG of the Project is subject to the requirements of NSPS Subpart KKKK, which are listed below:

Emission related limitations:

40 CFR 60.4320(a):	NOx emission limit (25 ppmvd @ 15% O2)
40 CFR 60.4330(a)(2):	SO_2 emission limit (0.060 lb/MMBTU)

Note: The above limitations are less stringent than the corresponding emission limits proposed for these pollutants in this air permit application

Operations monitoring/reporting requirements:

40 CFR 60.4345:	NOx CEM equipment requirements
40 CFR 60.4365(a):	Fuel sulfur content monitoring exemption
40 CFR 60.4375 & 40 CFR 60.4395:	Required reports & submittal schedules

Excess emissions monitoring/reporting requirements:

40 CFR 60.4350:	NOx data conversion for identifying excess emissions
40 CFR 60.4380(b):	Definition of NOx excess emission (4-hour rolling average) and monitor downtime

Test Method and Procedure Requirements:

40 CFR 60.4405 & 40 CFR 4415: Performance testing requirements for NOx CEM and SO_2

The permittee will install, calibrate, maintain and operate a continuous emission monitoring system for measuring NOx and CO emissions discharged to the atmosphere to show compliance with the proposed emission limits.

Compliance with the proposed limit for CEM measured NOx emissions will be based on a 3-hour rolling average (excluding periods of start-up, shutdown, and malfunction).

Compliance with the proposed limit for CEM measured CO emissions will be based on a 1-hour rolling average (excluding periods of start-up, shutdown, and malfunction).

7.7 Certification of Truth, Accuracy, and Completeness

A certification of truth, accuracy, and completeness is included with this application package.

The permittee will operate the unit in compliance with the attached Acid Rain permit application (Appendix E) and the superseding Acid Rain permit (40 CFR 72.9(a)).

The permittee will comply with the monitoring requirements under 40 CFR 75 (40 CFR 72.9(b)).

The permittee will hold allowances, as of the allowances transfer deadline, in the units' allowance subaccounts of not less than the total annual emissions of SO_2 for the previous calendar year (40 CFR 72.9(c)).

The permittee will keep the following records on site at the facility for a period of 5 years after document creation:

- Certificate of representation;
- All 40 CFR 75 monitoring information; and
- Copies of all Acid Rain program reports, compliance certifications, submission records, permit applications, and documentation used to demonstrate compliance (40 CFR 72.9(f)(1)).

For each year in which this unit is subject to an Acid Rain emission limitation, the permittee will meet the compliance certification requirements of this subpart including annual compliance reports (40 CFR 72 Subpart I).

The permittee will comply with the general provisions under 40 CFR 75 Subpart A, including submission of an Acid Rain permit application (Appendix E) and installation of CEMS (40 CFR 75 Subpart A).

The permittee will comply with the monitoring procedures under 40 CFR 75 Subpart B (40 CFR 75 Subpart B).

The permittee will comply with the CEMS operation and maintenance requirements under 40 CFR 75 Subpart C (40 CFR 75 Subpart C).

When necessary, as specified under 40 CFR 75 Subpart D, the missing data substitution procedures under this subpart will be followed (40 CFR 75 Subpart D).

The permittee will comply with the CEMS record keeping requirements under 40 CFR 75 Subpart F (40 CFR 75 Subpart F).

The permittee will comply with the CEMS reporting requirements under 40 CFR 75 Subpart G (40 CFR 75 Subpart G).

If initial stack testing indicates a CTG to be in compliance with applicable opacity and VOC emission limitations and the CTG is operated in accordance with manufacturer's recommendations including good combustion practice, it is expected that emissions of these pollutants will not increase over time. Therefore, it is proposed that no ongoing compliance demonstration be required for VOC or opacity.

7.6.2 Inlet Air Chiller module

The Applicant will use the following method(s) for determining compliance with the applicable requirements for the inlet air chiller module:

- Other (if applicable)
  - Pollutant(s): PM_{10}

- Compliance certification reports will be submitted to the Department according to the following schedule:
  - Start date: None – see below

- Compliance monitoring reports will be submitted to the Department according to the following schedule:
  - Start date: None – see below

It is proposed that no ongoing compliance demonstration with particulate emission limits be required for the chiller module. These eliminators are static, physical devices that are installed within the structure and performance is not controlled or monitored by any physical devices. Because testing for drift eliminator performance is very difficult to

accomplish and is seldom performed, a compliance determination method for this control equipment is not being proposed. Initial compliance will be demonstrated through vendor guarantees. No ongoing compliance demonstrations with the PM_{10} limits for the chiller module need be required.

###

APPENDIX A

EMISSION CALCULATIONS

Northern Arizona Energy Project, Mohave County, Arizona
Emissions and Operating Parameters for GE LM6000 Combustion Turbines
Natural Gas Firing

Case	1) Hot Base	2) Hot Low	3) Avg. Base	4) Avg. Low	5) Cold Base	6) Cold Low
Engine Load, kW	45,702	22,851	45,702	22,851	46,822	23,411
Ambient Temp, F	113	113	90	90	25	25
Engine Load	100%	50%	100%	50%	100%	50%
Heat input, MMBtu/hr (HHV)	432	263	432	263	436	263
Stack flow, lb/hr	1,013,573	806,056	999,072	794,367	1,031,783	832,853
Stack flow, acfm	634,682	458,994	620,818	448,753	614,523	445,370
Stack flow, dscfm	198,112	161,067	198,112	161,067	209,975	173,545
Stack temp, F	829.1	721.4	829.1	721.4	792.3	674.6
Stack exhaust, vol %						
O2 (dry)	14.48%	16.10%	14.48%	16.10%	14.79%	16.45%
CO2 (dry)	3.72%	2.79%	3.72%	2.79%	3.54%	2.60%
H2O	15.04%	12.47%	13.15%	10.47%	9.66%	6.66%
Emissions						
NOx, ppmvd @ 15% O2	5.0	5.0	5.0	5.0	5.0	5.0
NOx, lb/hr	7.83	4.77	7.83	4.77	7.90	4.78
NOx, lb/MMBtu	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181
SO2, ppmvd @ 15% O2	2.79	2.79	2.79	2.79	2.79	2.79
SO2, lb/hr	6.09	3.71	6.09	3.71	6.14	3.71
SO2, lb/MMBtu	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141
CO, ppmvd @ 15% O2	6.0	6.0	6.0	6.0	6.0	6.0
CO, lb/hr	5.72	3.48	5.72	3.48	5.77	3.49
CO, lb/MMBtu	0.0132	0.0132	0.0132	0.0132	0.0132	0.0132
VOC, ppmvd @ 15% O2	5	5	5	5	5	5
VOC, lb/hr	2.73	1.66	2.73	1.66	2.75	1.67
VOC, lb/MMBtu	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063
PM10, lb/hr	2.7	2.7	2.7	2.7	2.7	2.7
PM10, lb/MMBtu	0.0062	0.0103	0.0062	0.0103	0.0062	0.0102
PM10, gr/dscf	0.00159	0.00196	0.00159	0.00196	0.00150	0.00182
NH3, ppmvd@15% O2	10.0	10.0	10.0	10.0	10.0	10.0
NH3, lb/hr	5.80	3.53	5.80	3.53	5.85	3.54

Northern Arizona Energy Project, Mohave County, Arizona
Hazardous Air Pollutants (HAPs)

Pollutant	Emission Factor[2] lb/10^6 BTU		Emission Rate/turbine			Facility Emissions
				lbs/hr	g/s	tpy
1,3-Butadiene	<	4.3E-07	<	0.0002	0.0000	0.001
Acetaldehyde		4.0E-05		0.0173	0.0022	0.092
Acrolein		6.4E-06		0.0028	0.0003	0.015
Benzene		1.2E-05		0.0052	0.0007	0.027
Ethylbenzene		3.2E-05		0.0138	0.0017	0.073
Formaldehyde[3]		2.2E-04		0.0951	0.0120	0.504
Hexane		1.7E-04		0.0744	0.0094	0.394
Naphthalene		1.3E-06		0.0006	0.0001	0.003
PAHs[4]		2.2E-06		0.0010	0.0001	0.005
Propylene Oxide	<	2.9E-05	<	0.0125	0.0016	0.066
Toluene		1.3E-04		0.0562	0.0071	0.298
Xylene		6.4E-05		0.0277	0.0035	0.147
Total Organic HAPs				0.3066	0.0386	**1.625**

Natural Gas Flow Rate = $0.43 * 10^6$ scfh 432.2 MMBtu/hr

Notes:
1) The emission values are based on Natural Gas at 1017 Btu/scf.
2) Emission Factors are from AP-42 Section 3.1, Stationary Combustion Turbines, except for formaldehyde.
3) Formaldehyde emission factor is base on new EPA test data contained in an EPA Memorandum, authored by Sims Roy, dated August 21, 2001 and entitled *Hazardous Air Pollutant (HAP) Emission Control Technology for New Stationary Combustion Turbines* .
4) PAH is polycyclic aromatic hydrocarbons. This value includes naphthalene.

Northern Arizona Energy Project, Mohave County, Arizona
Chiller Emissions Calculations

Calculation of Drift rate: 0.10 gpm

Basis: Vendor guaranteed drift rate:

$$\frac{0.10 \text{ gallon}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} \times \frac{8.34 \text{ lb } H_2O}{\text{gallon}} = \frac{50 \text{ lb } H_2O \text{ mist}}{\text{hr}}$$

Max solids loading for chiller: 3100 ppm

Basis: Water analysis 517 ppm TDS content with 6 cycles of concentration

Emission Rate: 6000 hr/yr

Basis: All solids fall out as PM10

$$\frac{50 \text{ lb } H_2O}{\text{hr}} \times \frac{3100 \text{ lbs } PM_{10}}{1{,}000{,}000 \text{ lb } H_2O} = \frac{0.16 \text{ lbs } PM_{10}^{1}}{\text{hr}}$$

$$\frac{0.16 \text{ lbs } PM_{10}}{\text{hr}} \times \frac{6{,}000 \text{ hr}}{\text{yr}} \times \frac{1 \text{ ton}}{2{,}000 \text{ lb}} = \frac{0.47 \text{ ton } PM_{10}^{1}}{\text{yr}}$$

Notes:

1. Emission rate is for the entire chiller. Individual cell emissions are calculated by dividing the total emissions by the number of cells in the chiller.

chiller air flowrate	405000	cfm/3 cells
	135000	cfm/cell
cell diam =	12	ft
cell velocity	1193.66	ft/min
	19.8944	ft/sec

Air flowrate provided by Joe Stuparich, Turbine Air Systems, 2/23/2007

Northern Arizona Energy Project, Mohave County, Arizona
Simple Cycle Emissions by Source

LM6000	NO_X Emission Rate			CO Emission Rate			VOC Emission Rate			$PM_{10}/PM_{2.5}$ Emission Rate		SO_2 Emission Rate	
Source	Startup/ Shutdown Max lb/hr	Max lb/hr[1]	ton/yr	Startup/ Shutdown Max lb/hr	Max lb/hr[1]	ton/yr	Startup/ Shutdown Max lb/hr	Max lb/hr[1]	ton/yr	Max lb/hr[1]	ton/yr	Max lb/hr[1,2]	ton/yr
CT1	35.50	7.90	9.93	15.00	5.77	8.98	4.50	2.75	3.88	2.70	3.58	6.14	8.08
CT2	35.50	7.90	9.93	15.00	5.77	8.98	4.50	2.75	3.88	2.70	3.58	6.14	8.08
CT3	35.50	7.90	9.93	15.00	5.77	8.98	4.50	2.75	3.88	2.70	3.58	6.14	8.08
CT4	35.50	7.90	9.93	15.00	5.77	8.98	4.50	2.75	3.88	2.70	3.58	6.14	8.08
Subtotal		31.60	39.71		23.09	35.90		11.02	15.54	10.80	14.31	24.56	32.30

Other 8760 hr/yr	NO_X Emission Rate			CO Emission Rate			VOC Emission Rate			$PM_{10}/PM_{2.5}$ Emission Rate		SO_2 Emission Rate	
Source Name	Startup/Shutdown Max lb/hr	Max lb/hr	ton/yr	Startup/Shutdown Max lb/hr	Max lb/hr	ton/yr	Startup/Shutdown Max lb/hr	Max lb/hr	ton/yr	Max lb/hr	ton/yr[5]	Max lb/hr	ton/yr
Chiller										0.16	0.47		
Subtotal										0.16	0.47		

Facility Total[3]	NO_X			CO			VOC			$PM_{10}/PM_{2.5}$		SO_2	
	Startup/Shutdown Max lb/hr	Max lb/hr	ton/yr	Startup/Shutdown Max lb/hr	Max lb/hr	ton/yr	Startup/Shutdown Max lb/hr	Max lb/hr	ton/yr	Max lb/hr	ton/yr	Max lb/hr	ton/yr
			39.71			35.90			15.54		14.78		32.30

Notes:

1) The maximum combustion turbine emission rates are based on full load operation at an ambient air temperature of 25°F.
2) SO2 emission rates are based on natural gas with 5 grains S/100 scf.
3) The annual combustion turbine emission totals are calculated based on a per turbine average of 2650 hour/yr operation, with 300 hr/yr in startup/shutdown mode.
4) Highlighted cells will be the proposed maximum allowable emission rates & facility totals for the permit application. Individual turbines will not be limited to a ton/yr cap. Total emissions from all operating units will be covered by the plantwide caps highlighted.
5) Chiller will operate when ambient temperature is greater than 60 F. Annual emissions based on 6000 hour/yr operation.

Northern Arizona Energy Project, Mohave County, Arizona
Griffith Toxic Air Pollutant Summary

Hazardous Air Pollutant	*Individual Stack Emissions* 7FA Turbines		*Individual Stack Emissions* Duct Burners		*Individual Stack Emissions* Boiler		*Individual Stack Emissions* Fire Pump		*TOTAL EMISSIONS* All Equipment
	#/hr	g/s	#/hr	g/s	#/hr	g/s	#/hr	g/s	tons/year
Organics									
1,3-Butadiene	0.00077	0.00010	0.00000	0.00000	0.00000	0.00000	0.00309	0.00039	0.008
Acetaldehyde	0.07169	0.00903	0.00058	0.00007	0.00009	0.00001	0.01112	0.00140	0.636
Acrolein	0.01147	0.00145	0.00051	0.00006	0.00008	0.00001	0.00048	0.00006	0.105
Benzene	0.02151	0.00271	0.00109	0.00014	0.00017	0.00002	0.00265	0.00033	0.199
Chlorobenzene	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.000
Ethylbenzene	0.05735	0.00723	0.00128	0.00016	0.00020	0.00003	0.00015	0.00002	0.515
Formaldehyde	0.39428	0.04968	0.00231	0.00029	0.00036	0.00005	0.02451	0.00309	3.482
Hexane	0.30843	0.03886	0.00083	0.00010	0.00014	0.00002	0.00038	0.00005	2.710
Hydrogen Chloride	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00265	0.00033	0.001
Naphthalene	0.00233	0.00029	0.00019	0.00002	0.00001	0.00000	0.00028	0.00004	0.022
PAHs	0.00394	0.00050	0.00026	0.00003	0.00001	0.00000	0.00079	0.00010	0.037
Propylene Oxide	0.05197	0.00655	0.00994	0.00125	0.01566	0.00197	0.00663	0.00084	0.613
Toluene	0.23298	0.02936	0.00499	0.00063	0.00078	0.00010	0.00150	0.00019	2.088
Xylenes	0.11470	0.01445	0.00371	0.00047	0.00058	0.00007	0.00060	0.00008	1.040
Total Organic HA									**11.456**
Metals									
Arsenic							2.27E-05	2.86E-06	5.68E-06
Cadmium							2.13E-05	2.68E-06	5.33E-06
Total Chromium							8.52E-06	1.07E-06	2.13E-06
Hexavelent Chromium							1.42E-06	1.79E-07	3.55E-07
Copper							5.82E-05	7.34E-06	1.46E-05
Lead							1.18E-04	1.49E-05	2.95E-05
Manganese							4.40E-05	5.55E-06	1.10E-05
Mercury							2.84E-05	3.58E-06	7.10E-06
Nickel							5.54E-05	6.98E-06	1.38E-05
Selenium							3.12E-05	3.94E-06	7.81E-06
Zinc							3.18E-04	4.01E-05	7.95E-05
Total Metal HAPs									**1.77E-04**

APPENDIX B

AMBIENT AIR QUALITY MODELING RESULTS

Northern Arizona Energy Project, Mohave County, Arizona
Summary Results of Air Quality Impact Analysis for New Facility

Criteria Pollutant	Full Load (µg/m3)			50% Load (µg/m3)		
	Hot	Normal	Cold	Hot	Normal	Cold
Nox 1hr	16.201	16.425	17.058	13.754	13.994	14.439
Nox annual	0.087	0.089	0.091	0.067	0.068	0.070
CO 1hr	11.783	11.945	12.452	10.086	10.262	10.589
CO 8 hr	2.352	2.386	2.466	1.773	1.790	1.818
SO2 1hr	12.601	12.775	13.135	10.774	10.962	11.311
SO2 3 hr	6.159	6.260	6.407	4.798	4.850	4.945
SO2 24 hr	0.852	0.864	0.881	0.866	0.885	0.919
SO2 annual	0.068	0.069	0.070	0.053	0.053	0.055
PM10/PM2.5 24 hr	0.387	0.392	0.389	0.731	0.741	0.665
PM10/PM2.5 annual	0.031	0.031	0.031	0.039	0.039	0.039

NH3	Full Load (µg/m3)			50% Load (µg/m3)		
	Hot	Normal	Cold	Hot	Normal	Cold
1 hr	11.947	12.111	12.623	10.086	10.262	10.829
3 hr	5.839	5.935	6.158	4.492	4.540	4.735
8 hr	2.384	2.419	2.499	1.773	1.790	1.859
24 hr	0.808	0.819	0.846	0.811	0.829	0.880
annual	0.064	0.065	0.068	0.049	0.050	0.052

HAPs (Full Load, Normal Operation)	1 hr (µg/m3)	24 hr (µg/m3)	Annual (µg/m3)
1,3-Butadiene	3.88E-04	2.63E-05	2.09E-06
Acetaldehyde	3.71E-02	2.51E-03	2.00E-04
Acrolein	5.94E-03	4.00E-04	--
Benzene	1.11E-02	7.50E-04	6.00E-05
Ethylbenzene	2.97E-02	2.01E-03	--
Formaldehyde	2.04E-01	1.38E-02	1.09E-03
n-Hexane	1.60E-01	1.08E-02	--
Naphthalene	1.21E-03	8.00E-05	--
Propylene Oxide	2.69E-02	1.82E-03	1.40E-04
Toluene	1.21E-01	8.15E-03	--
Xylene	5.94E-02	4.01E-03	--

Northern Arizona Energy Project, Mohave County, Arizona
Summary Results of Air Quality Impact Analysis for NAEP and Griffith

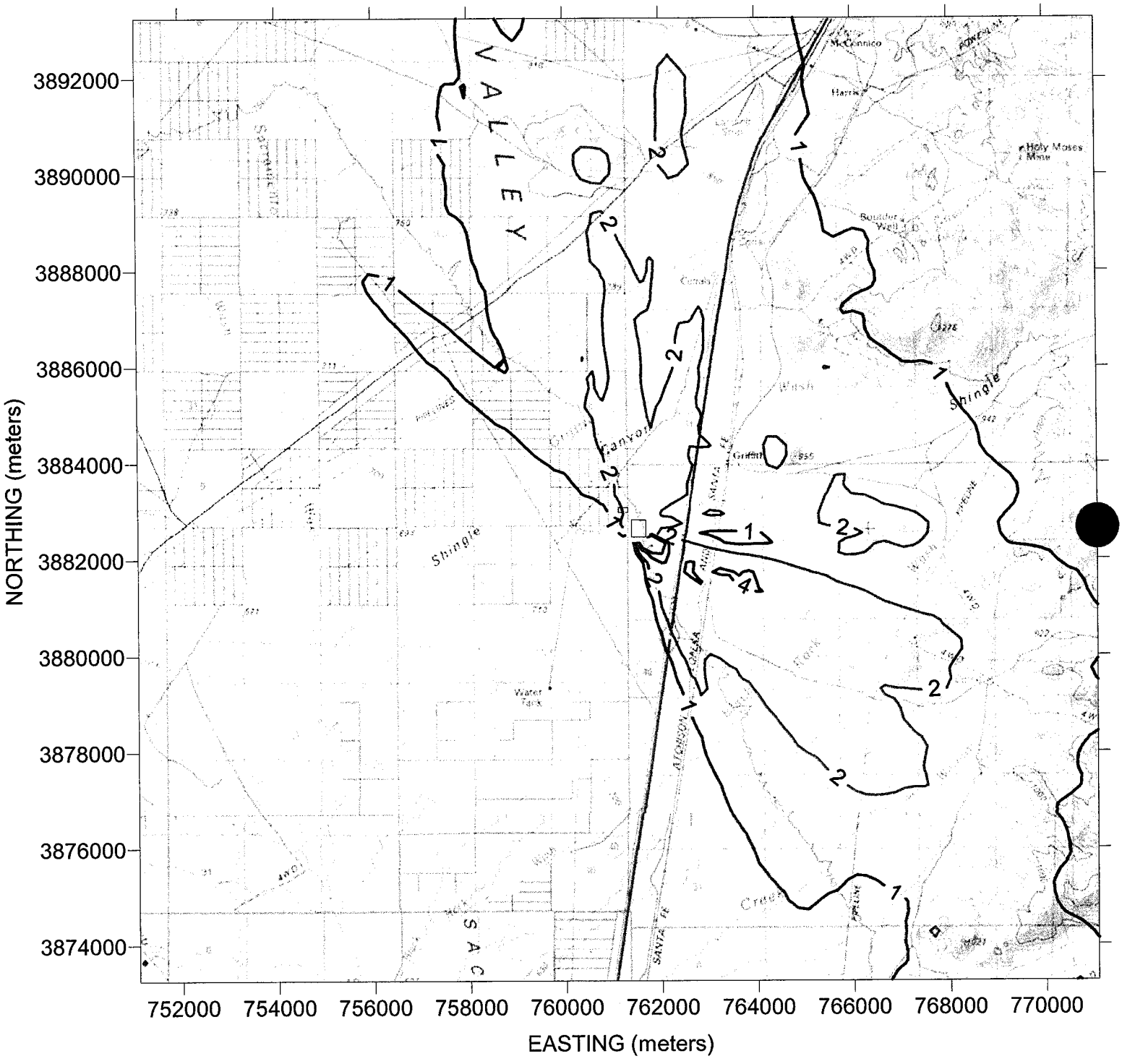
Criteria Pollutant	Full Load (µg/m3)			50% Load (µg/m3)		
	Hot	Normal	Cold	Hot	Normal	Cold
Nox 1hr	989.20	989.20	989.20	989.20	989.20	989.20
Nox annual	8.38	8.38	8.38	8.38	8.38	8.38
CO 1hr	590.40	590.40	590.40	590.40	590.40	590.40
CO 8 hr	93.95	93.95	93.95	93.95	93.95	93.95
SO2 1hr	24.79	24.79	24.79	24.79	24.79	24.79
SO2 3 hr	8.28	8.28	8.28	8.28	8.28	8.28
SO2 24 hr	2.21	2.22	2.22	2.36	2.37	2.37
SO2 annual	0.31	0.31	0.31	0.31	0.31	0.31
PM10/PM2.5 24 hr	13.86	13.86	13.86	13.86	13.86	13.86
PM10/PM2.5 annual	1.41	1.41	1.41	1.42	1.42	1.41

TAPs (Full Load, Normal Operation)	1 hr (µg/m3)	24 hr (µg/m3)	Annual (µg/m3)
1,3-Butadiene	1.78E-03	2.90E-04	2.00E-05
Acetaldehyde	1.67E-01	2.76E-02	1.99E-03
Acrolein	2.76E-02	4.63E-03	--
Ammonia	1.98E+01	1.69E+00	1.09E-01
Benzene	6.57E-02	1.16E-02	1.04E-03
Ethylbenzene	1.51E-01	2.58E-02	--
Formaldehyde	9.46E-01	1.57E-01	1.12E-02
n-Hexane	7.26E-01	1.20E-01	--
Naphthalene	8.15E-03	1.46E-03	--
Propylene Oxide	4.45E+00	2.37E-01	3.77E-02
Toluene	6.12E-01	1.04E-01	--
Xylene	3.20E-01	5.52E-02	--

Northern Arizona Energy Project, Griffith, Mohave County, Arizona
Summary Results of Air Quality Fumigation Analysis for New Facility

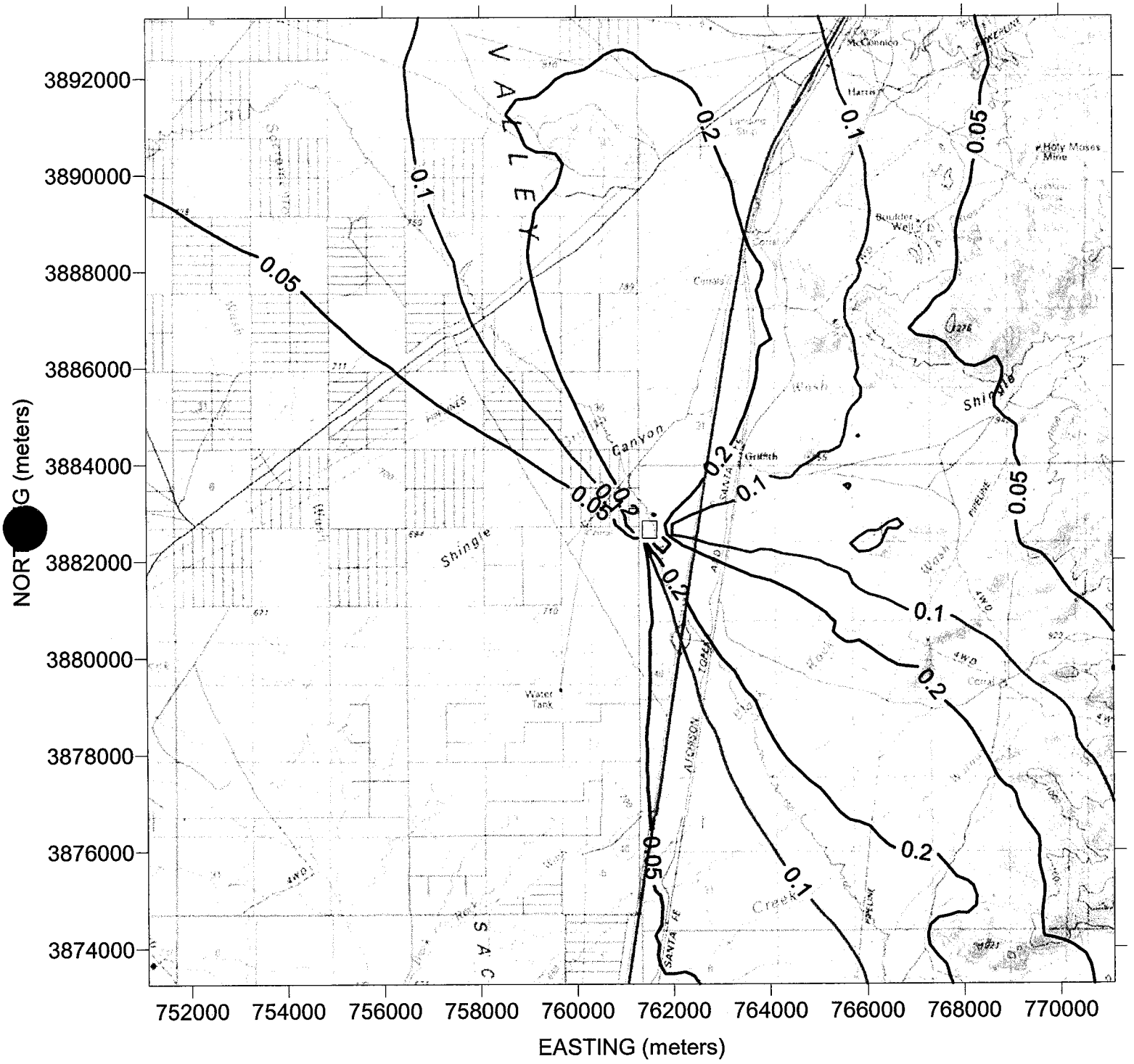
	Emission Rate	Total Impact (ug/m3) - all CTG's			
Northern Arizona Energy - Full Load, Hot Case	g/s	1-hr	3-hr	8-hr	24-hr
NOx	0.99	2.81	2.96	2.09	1.15
CO	0.72	2.05	2.16	1.53	0.84
VOC	0.34	0.98	1.03	0.73	0.40
PM10/PM2.5	0.34	0.97	1.02	0.72	0.40
SO2	0.77	2.18	2.30	1.63	0.89
Northern Arizona Energy - 50% Load, Hot Case	g/s	1-hr	3-hr	8-hr	24-hr
NOx	0.60	2.44	2.46	1.78	0.99
CO	0.44	1.78	1.80	1.30	0.72
VOC	0.21	0.85	0.86	0.62	0.35
PM10/PM2.5	0.34	1.38	1.39	1.01	0.56
SO2	0.47	1.89	1.91	1.39	0.77
Northern Arizona Energy - Full Load, Normal Cas	g/s	1-hr	3-hr	8-hr	24-hr
NOx	0.99	2.79	2.99	2.09	1.14
CO	0.72	2.04	2.18	1.53	0.83
VOC	0.34	0.97	1.04	0.73	0.40
PM10/PM2.5	0.34	0.96	1.03	0.72	0.39
SO2	0.77	2.17	2.32	1.62	0.89
Northern Arizona Energy - 50% Load, Normal Cas	g/s	1-hr	3-hr	8-hr	24-hr
NOx	0.60	2.43	2.48	1.79	0.99
CO	0.44	1.78	1.81	1.31	0.72
VOC	0.21	0.85	0.87	0.62	0.35
PM10/PM2.5	0.34	1.38	1.41	1.01	0.56
SO2	0.47	1.89	1.93	1.39	0.77
Northern Arizona Energy - Full Load, Cold Case	g/s	1-hr	3-hr	8-hr	24-hr
NOx	1.00	2.66	3.03	2.05	1.10
CO	0.73	1.95	2.22	1.50	0.80
VOC	0.35	0.93	1.06	0.72	0.38
PM10/PM2.5	0.34	0.91	1.04	0.70	0.38
SO2	0.77	2.07	2.36	1.59	0.86
Northern Arizona Energy - 50% Load, Cold Case	g/s	1-hr	3-hr	8-hr	24-hr
NOx	0.60	2.31	2.49	1.74	0.95
CO	0.44	1.69	1.82	1.27	0.69
VOC	0.21	0.80	0.87	0.61	0.33
PM10/PM2.5	0.34	1.30	1.41	0.98	0.53
SO2	0.47	1.79	1.94	1.35	0.74

Max Distance to Breakup Fumigation	
CTGs	19.65 km



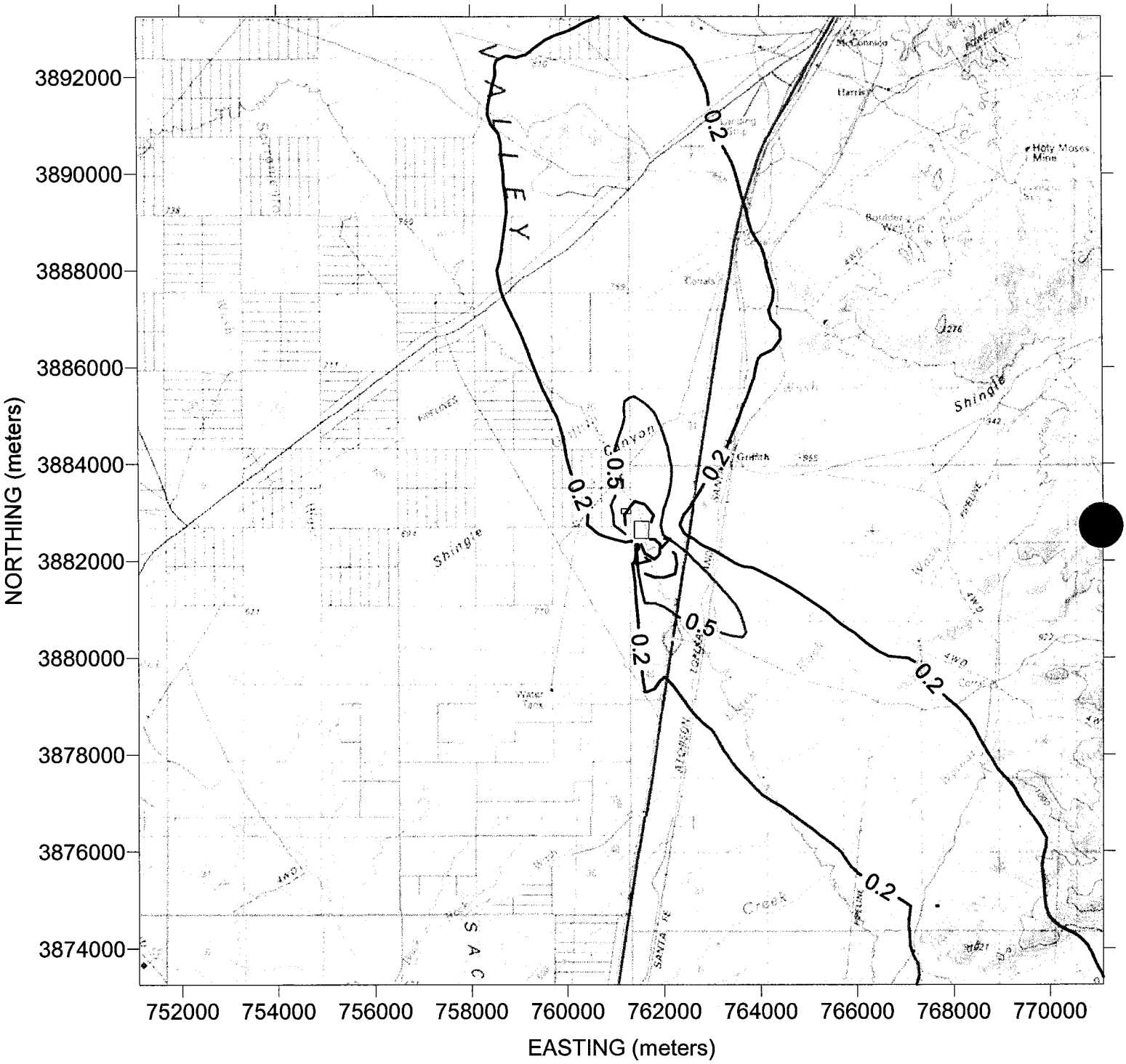
Northern Arizona Energy Project, Mohave County, Arizona
24 Hour Impacts for PM10/PM2.5 Emissions Based on Operations at NAEP and Griffith

Appendix B



Northern Arizona Energy Project, Mohave County, Arizona
Annual Impacts for PM10/PM2.5 Emissions based on Operations at NAEP and Griffith

Appendix B



Northern Arizona Energy Project, Mohave County, Arizona
Annual Impacts for NOx Emissions Based on Operations at NAEP and Griffith

APPENDIX C

AMBIENT AIR QUALITY MODELING INPUTS

Northern Arizona Energy Project, Mohave County, Arizona
Stack Parameters for Modeling Analysis

Stack ID #	Base Elevation ft	Base Elevation m	Stack Height ft	Stack Height m	Stack Diameter ft	Stack Diameter m
CT1	2,490.00	758.95	85.00	25.91	10.00	3.05
CT2	2,490.00	758.95	85.00	25.91	10.00	3.05
CT3	2,490.00	758.95	85.00	25.91	10.00	3.05
CT4	2,490.00	758.95	85.00	25.91	10.00	3.05
CHLRs1- 6	2,490.00	758.95	45.00	13.72	12.00	3.66

CTG Emission Rates (g/s)

Pollutant	Full Load Hot	Full Load Normal	Full Load Cold	50% Load Hot	50% Load Normal	50% Load Cold
NOx	0.99	0.99	1.00	0.60	0.60	0.60
CO	0.72	0.72	0.73	0.44	0.44	0.44
VOC	0.34	0.34	0.35	0.21	0.21	0.21
PM10/PM2.5	0.34	0.34	0.34	0.34	0.34	0.34
SO2	0.77	0.77	0.77	0.47	0.47	0.47
NH3	0.73	0.73	0.74	0.44	0.44	0.45

Chiller Emission Rates (g/s) - per cell

Pollutant	Full Load Hot	Full Load Normal	Full Load Cold	50% Load Hot	50% Load Normal	50% Load Cold
PM10/PM2.5	0.0033	0.0033	*	0.0033	0.0033	*

*Chiller will be shut off at temperatures below 60°F; therefore no emissions during Cold Case

Stack areas		
CTG	78.54	ft2
Chiller Cell	113.10	ft2

Structure	Dimensions (ft) Width	Length	Height
Chiller	71.50	37.40	43.10
SCR Catalyst Casing	24.30	29.50	43.00
CTG Transition	24.30	21.50	21.50
CTG Housing	48.90	63.00	51.00
Compressor Buildings	39.30	60.70	15.00

The SCR is adjacent to the stack and the CTG mates up via the CTG transtion with the SCR, so the CTG is 48.6 ft from the side of the stack.

Full Load - Hot Case (113°F)				50% Load - Hot Case (113°F)			
Max Flow Rate		Temperature		Max Flow Rate		Temperature	
ft/sec	m/sec	°F	K	ft/sec	m/sec	°F	K
134.68	41.05	829.10	716.17	97.40	29.69	721.40	656.33
134.68	41.05	829.10	716.17	97.40	29.69	721.40	656.33
134.68	41.05	829.10	716.17	97.40	29.69	721.40	656.33
134.68	41.05	829.10	716.17	97.40	29.69	721.40	656.33
19.89	6.06	113.00	318.33	19.89	6.06	113.00	318.33

Full Load - Normal Case (90°F)				50% Load - Normal Case (90°F)			
Max Flow Rate		Temperature		Max Flow Rate		Temperature	
ft/sec	m/sec	°F	K	ft/sec	m/sec	°F	K
131.74	40.15	829.10	716.17	95.23	29.03	721.40	656.33
131.74	40.15	829.10	716.17	95.23	29.03	721.40	656.33
131.74	40.15	829.10	716.17	95.23	29.03	721.40	656.33
131.74	40.15	829.10	716.17	95.23	29.03	721.40	656.33
19.89	6.06	90.00	305.56	19.89	6.06	90.00	305.56

Full Load - Cold Case (25°F)				50% Load - Cold Case (25°F)			
Max Flow Rate		Temperature		Max Flow Rate		Temperature	
ft/sec	m/sec	°F	K	ft/sec	m/sec	°F	K
130.41	39.75	792.30	695.72	94.51	28.81	674.60	630.33
130.41	39.75	792.30	695.72	94.51	28.81	674.60	630.33
130.41	39.75	792.30	695.72	94.51	28.81	674.60	630.33
130.41	39.75	792.30	695.72	94.51	28.81	674.60	630.33
*	*	*	*	*	*	*	*

Northern Arizona Energy Project, Mohave County, Arizona
Toxic Air Pollutants Emission Rates at NAEP and Griffith for AAAQS Analysis

Pollutant	GEC Turbines	GEC Boiler	NAEP Turbines
	g/s/unit	g/s	g/s/unit
1,3-Butadiene	9.7098E-05	0.0000E+00	2.3416E-05
Acetaldehyde	9.1050E-03	1.1544E-05	2.1783E-03
Acrolein	1.5097E-03	1.0054E-05	3.4852E-04
Ammonia	5.1484E-01	0.0000E+00	7.3080E-01
Benzene	3.7983E-03	2.1598E-05	6.5348E-04
Ethylbenzene	8.5066E-03	2.5694E-05	1.7426E-03
Formaldehyde	5.1983E-02	4.5803E-05	1.1980E-02
Hexane	3.9694E-02	1.7130E-05	9.3720E-03
Naphthalene	4.8566E-04	1.1171E-06	7.0794E-05
Propylene Oxide	1.6493E-02	1.9736E-03	1.5792E-03
Toluene	3.4350E-02	9.8681E-05	7.0794E-03
Xylene	1.8166E-02	7.3359E-05	3.4852E-03

Appendix C

From: Peter G. Hyde [Hyde.Peter@azdeq.gov]
Sent: Thursday, February 22, 2007 7:49 AM
To: Mark Peak
Cc: Balaji Vaidyanathan; jwhite@lspower.com; Dana Diller; Marc Valdez
Subject: RE: Arroyo Energy Modeling Protocol
February 22, 2007

Mark Peak:

The modeling protocol for this natural-gas fired turbine facility near Kingman adequately covers all the essential elements for the air quality modeling. I know of no reason not to proceed with the modeling work.

Cordially,

Peter Hyde

602 771 7642

From: Mark Peak [mailto:MPeak@sierraresearch.com]
Sent: Wednesday, January 31, 2007 2:38 PM
To: Peter G. Hyde
Cc: Balaji Vaidyanathan; jwhite@lspower.com; Dana Diller; Mark Peak; Marc Valdez
Subject: Arroyo Energy Modeling Protocol

Peter ☺
Thanks for meeting with the Arroyo Energy project team earlier today. Attached please find our proposed modeling protocol for the project. If you have any questions or need us to clarify any of the proposed methodology, please let me know as soon as possible. We look forward to hearing back from in the next week or so, so that we can proceed with our modeling as quickly as possible.
Best Regards

Mark L. Peak
Sierra Research
1801 J Street
Sacramento, CA 95814
Tel: 916-444-6666
Fax: 916-444-8373
www.sierraresearch.com

Appendix C

From: Peter G. Hyde [Hyde.Peter@azdeq.gov]
Sent: Thursday, January 18, 2007 3:24 PM
To: Mark Peak
Subject: RE: Follow-up on modeling for proposed Arroyo Energy project near Kingman, AZ

Attachments: arroyo background.doc
January 18, 2007

Mark:

Proceed with ISC on this project; I'll await the protocol. Background concentrations attached.

P. Hyde

From: Mark Peak [mailto:MPeak@sierraresearch.com]
Sent: Thursday, January 18, 2007 2:14 PM
To: Peter G. Hyde
Cc: Marc Valdez; Eric Walther; Mark Peak; Balaji Vaidyanathan
Subject: Follow-up on modeling for proposed Arroyo Energy project near Kingman, AZ

Peter ☺

Based on your phone call earlier today, we will proceed with modeling the Arroyo Energy project utilizing ISC. As requested, we will prepare a modeling protocol for your review and approval. Can you please confirm the use of ISC by responding to this e-mail so that we have a written record for our files. Also, can you please forward me the background air quality values you would like us to use for the modeling report.

Best Regards,

Mark L. Peak
Senior Project Engineer
Sierra Research
1801 J Street
Sacramento, CA 95814
Tel: 916-444-6666
Fax: 916-444-8373
www.sierraresearch.com

From: Mark Peak
Sent: Tuesday, January 16, 2007 12:44 PM

Appendix C

To: Peter Hyde (Hyde.Peter@azdeq.gov)
Cc: Marc Valdez; Mark Peak; Eric Walther
Subject: Follow-up on modeling for proposed Arroyo Energy project near Kingman, AZ

Peter,

Based on our discussion earlier today, you indicated that you are going to contact EPA Region 9 and query them as to the acceptability of using ISC vs AERMOD for evaluating impacts from the proposed Arroyo Energy project. Since the project will be emitting below PSD major significance thresholds and is therefore a minor modification at a major stationary source, doesn't the department have discretion on the choice of model? The new equipment which will be included in the modeling analysis consists of 4 LM6000 combustion gas turbines (peaking units) and a chiller. Based on the previous e-mails with the permit staff, emissions from the existing Griffith facility will also need to be included to show the cumulative impacts from the 2 facilities do not exceed any NAAQS or Arizona state standards.

I look forward to hearing from you soon regarding the final decision on the model. Can you forward me the background air quality values we discussed during our call? Have a great day!

Best Regards,

Mark L. Peak
Senior Project Engineer
Sierra Research
1801 J Street
Sacramento, CA 95814
Tel: 916-444-6666
Fax: 916-444-8373
www.sierraresearch.com

January 18, 2007

These are adequate background concentrations for the Arroyo project.

TABLE 5-2. ADEQ BACKGROUND CONCENTRATIONS FOR KINGMAN

Pollutant	Averaging Time	Background Value ($\mu g/m^3$)
NO_2 [a]	Annual	4
CO [b]	1-hour	582
	8-hour	582
PM_{10} [c]	24-hour	46
	Annual	14
SO_2 [d]	3-hour	246
	24-hour	52
	Annual	6

[a] Long-term average value (0.002 ppm) of several monitors located near power plants in rural areas of Arizona.
[b] Typical continental ambient CO background value (0.5 ppm) used in most regional models.
[c] Average max. values over 3-year period from Kingman - Praxair monitoring station (Mohave County).
[d] Max. values over 3-year period from Bullhead City - SCE monitoring station (Mohave County).

Peter Hyde, ADEQ

sierra research

Air Dispersion Modeling Protocol
Arroyo Energy Project
Griffith, Mohave County, Arizona

prepared for:

Arroyo Energy, LLC

January 31, 2007

prepared by:

Sierra Research, Inc.
1801 J Street
Sacramento, California 95814
(916) 444-6666

AIR DISPERSION MODELING PROTOCOL
ARROYO ENERGY PROJECT

Submitted to:

Arizona Department of Environmental Quality

January 31, 2007

AIR DISPERSION MODELING PROTOCOL

Table of Contents

1. INTRODUCTION

Arroyo Energy LLC (Arroyo) is planning to submit a Class I Air Quality Permit Application to Construct and Operate to the Arizona Department of Environmental Quality (ADEQ) for the installation of four natural gas-fired combustion turbine generating units in Mohave County, Arizona. This modeling protocol outlines the proposed air dispersion modeling techniques that will be used to assess impacts from the proposed sources and is consistent with the ADEQ's December 2004 modeling guidance document.

2. FACILITY DESCRIPTION AND SOURCE INFORMATION

The Project is a natural gas-fired, simple cycle power generating plant that will supply power to load-serving entities in Arizona and surrounding regions for the purpose of serving their customers during periods of peak electricity demand. The Project is comprised of four General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) with inlet air chillers. The Project will be designed to produce 175 MW of net electrical output with a heat rate of 9975 Btu/kWh (HHV) based upon the design condition ambient temperature of 90 degrees Fahrenheit (°F). The CTGs are capable of rapid start-up, allowing the Project to respond to fluctuations in electric demand within 10 minutes.

Emissions from the CTGs will be controlled by a combination of water injection and selective catalytic reduction (SCR) to reduce nitrogen oxides (NOx) emissions and an oxidation catalyst to reduce carbon monoxide (CO) and volatile organic compound (VOC) emissions.

Impacts from operation of the facility will be compared to the following:

Air Quality Criteria	NO_2	$PM_{2.5}$	PM_{10}	CO	SO_2	TAPs
Arizona Ambient Air Quality Guidelines List						√
National Ambient Air Quality Standards	√	√	√	√	√	

Project Location

The proposed CTGs will be constructed on a 40-acre site north of and adjacent to the existing Griffith Energy Power Generating Plant (Griffith) approximately 9 miles southeast of Kingman in Mohave County, Arizona. The UTM coordinates of the site are

approximately 213735 meters easting, 3883633 meters northing (NAD 27, Zone 12). The nominal site elevation is 2,475 feet above mean sea level.

Meteorological Data

Twelve months of meteorological data will be used in the dispersion modeling analysis to determine ambient air quality impacts. Surface meteorological data for this analysis was collected at Ford Motor Company's Arizona Proving Ground facility, which is located approximately 12 miles south of the proposed Arroyo site. The meteorological data set covers the time interval from September 1, 1996 (when the electronic archives began) to February 28, 1998. The data proposed for use for the Arroyo Energy Project was collected between January 1, 1997 and December 31, 1997.

Existing Ambient Air Quality Data

Background ambient air quality data for the project area were provided by the ADEQ air assessment section. Ambient NO_2, SO_2, PM_{10}, $PM_{2.5}$, and CO data are collected at various monitoring stations around Mohave County and have been deemed adequate for use in evaluating impacts from the Arroyo Energy Project.

Table 2-1
ADEQ Background Concentrations for Arroyo Energy Project

Pollutant	Averaging Time	Background Value ($\mu g/m^3$)
NO_2[a]	Annual	4
CO[b]	1-hour	582
	8-hour	582
PM_{10}[c]	24-hour	46
	Annual	14
SO_2[d]	3-hour	246
	24-hour	52
	Annual	6

[a] Long-term average value (0.002 ppm) of several monitors located near power plants in rural areas of Arizona.
[b] Typical continental ambient CO background value (0.5 ppm) used in most regional models.
[c] Average maximum values over 3-year period from Kingman – Praxair monitoring station (Mohave County).
[d] Maximum values over 3-year period from Bullhead City – SCE monitoring station (Mohave County).

3. DISPERSION MODEL OVERVIEW AND INPUTS

Air Quality Dispersion Models

Overview – Several US EPA dispersion models are proposed for use to quantify pollutant impacts on the surrounding environment based on the emission sources' operating parameters and their locations. The models proposed for use are the Building Profile Input Program (BPIP, current version 95086), Industrial Source Complex Short Term Model (ISCST3, current version 02035), and the SCREEN3 (current version). These models, along with options for their use and how they are used, are discussed below.

Simple, Complex, and Intermediate Terrain Impacts – For modeling the project in simple, complex, and intermediate terrain, the guideline ISCST3 model will be used with the aforementioned hourly meteorological data from the Arizona Proving Ground monitoring station for the project site. The ISCST3 model is a steady-state, multiple-source, Gaussian dispersion model designed for use with stack emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources. While AERMOD has been adopted as a guideline model, a full meteorological data set has not yet been established for the project area. Due to this factor and since the project is a minor source, ADEQ has agreed that the use of ISCST3 is acceptable for this project.

The ISCST3 model requires hourly meteorological data consisting of wind vector, wind speed, temperature, stability class, and mixing height. The model assumes that there is no variability in meteorological parameters over a one-hour time period, hence the term steady-state. The ISCST3 model allows input of multiple sources and source groupings, eliminating the need for multiple model runs. Complex phenomena such as building-induced plume downwash are treated in this model.

The ISCST3 model is also capable of calculating pollutant concentrations in intermediate terrain. Intermediate terrain is defined as terrain between stack top and final plume height. In calculating pollutant concentrations in intermediate terrain, the model will select the higher of the simple and complex terrain calculations on an hour-by-hour, source-by-source, and receptor-by-receptor basis.

Technical options selected for the ISCST3 model are listed below. Use of these options follows the US EPA's (1986, 1987, 1990, and 1994) modeling guidance and/or sound scientific practice. An explanation of these options and the rationale for their selection is provided below.

- Default option (includes gradual plume rise, stack-tip downwash except for Schulman-Scire [SS] downwash, buoyancy-induced dispersion except for SS downwash, default wind profile exponents, default temperature gradients);
- Anemometer height = 10 meters;
- Rural dispersion parameters; and
- Elevated receptor terrain heights option.

Final plume rise option does not consider the possible effects of gradual plume rise on ambient concentrations during the rising phase of the plume downwind transport. Gradual plume rise is recommended by US EPA (1986, 1987, 1990, 1994) when there is significant terrain close to the stacks. Buoyancy-induced dispersion, which accounts for the buoyant growth of a plume caused by entrainment of ambient air, will be included because of the relatively warm exit temperature and subsequent buoyant nature of the exhaust plumes. Stack-tip downwash, which adjusts the effective stack height downward following the methods of Briggs (1972) for cases where the stack exit velocity is less than 1.5 times the wind speed at stack top, will be selected per US EPA guidance.

Based on the land use classification procedure of Auer (1978), land use within the area circumscribed by a three-km radius around the Arroyo Energy Project site was evaluated and determined to be predominantly rural. In these modeling analyses supporting the permitting of the facility, dispersion coefficients will be assigned "rural" in accordance with this evaluation.

The calm processing option allows the user to direct the program to exclude hours with persistent calm winds in the calculation of concentrations for each averaging period. The ISCST3 model recognizes a calm wind condition as a wind speed less than or equal to one meter per second and a wind direction equal to that of the previous hour (a wind speed of zero m/sec is used in the ASCII meteorological data file). The calm processing option in the ISCST3 model will then exclude these hours from the calculation of concentrations.

Ambient Ratio Method and Ozone Limiting Method – Annual NO_2 concentrations will initially be based on the assumption that there is total conversion of NO to NO_2 and be equivalent to the modeled NOx values. This value will be compared to the NAAQS. If the concentration exceeds the allowable level, the annual NOx estimate will be adjusted using the Ambient Ratio Method (ARM), as specified in ADEQ's Modeling Guideline (ADEQ, 2004). The Guideline allows a nationwide default conversion rate of 75% for annual NO_2/NOx ratios.

Should NO_2 concentrations need to be examined in a more rigorous manner, the Ozone Limiting Method (OLM) will be used. In accordance with ADEQ policy, average background hourly ozone data will be used in the OLM to calculate hourly NO_2 concentrations from hourly NOx concentrations. The OLM involves an initial comparison of the estimated maximum NOx concentration and the ambient O_3 concentration to determine which is the limiting factor to NO_2 formation. If the O_3 concentration is greater than the maximum NOx concentration, total conversion is assumed. If the NOx concentration is greater than the O_3 concentration, the formation of NO_2 is limited by the ambient O_3 concentration. In this case, the NO_2 concentration is set equal to the O_3 concentration plus a correction factor that accounts for in-stack and near-stack thermal conversion. US EPA's ISC-OLM model will then be used to calculate the NO_2 concentration based on the OLM method.

Fumigation – The SCREEN3 model will be used to evaluate inversion breakup and fumigation impacts for short-term averaging periods (24 hours or less), as appropriate. The methodology in US EPA 454/R-92-019 (Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised) and in the ADEQ modeling guidelines will be followed for these analyses. Combined impacts for all sources under fumigation conditions will be evaluated, based on US EPA and any applicable ADEQ modeling guidelines.

Good Engineering Practice Stack Height and Downwash

ISCST3 can account for building downwash effects on dispersing plumes. Stack locations and heights and building locations and dimensions will be input to BPIP. The first part of BPIP determines and reports on whether a stack is being subjected to wake effects from a structure or structures. The second part calculates direction-specific building dimensions for each structure that are used by ISCST3 to evaluate wake effects. The BPIP output is formatted for use in ISCST3 input files.

Receptor Selection

Receptor and source base elevations will be determined from USGS Digital Elevation Model (DEM) data using the 7½-minute format (10- to 30-meter spacing between grid nodes). All coordinates will be referenced to UTM North American Datum 1927 (NAD27), zone 12. The ISCST3 receptor elevations will be interpolated among the DEM nodes.

Cartesian coordinate receptor grids will be used to provide adequate spatial coverage surrounding the project area for assessing ground-level pollution concentrations, to identify the extent of significant impacts, and to identify maximum impact locations. A 500-meter resolution coarse receptor grid will be developed and will extend outwards at least 10 km (or more as necessary to calculate the significant impact area).

For the full impact analyses, a nested grid will be developed to fully represent the maximum impact area(s). This grid will have 25-meter resolution along the process area boundary (PAB) in a single tier of receptors composed of four segments extending out to 100 meters from the PAB, 100-meter resolution from 100 meters to 1,000 meters from the PAB, 250-meter spacing out to 5 km from the PAB, and 500 meter spacing out to at least as far as 10 km from the PAB. If a predicted concentration at an individual receptor exceeds 90% of the applicable standard or guideline, additional refined receptor grids with 25-meter resolution will be placed around the maximum coarse grid impacts and extend out 1,000 meters in all directions. Concentrations within the facility PAB will not be calculated.

Modeling Scenarios

Pollutant emissions to the atmosphere from the proposed facility will occur from combustion of natural gas in the combustion turbines, and from the small chiller cooling tower. Emission rates will be included in the permit application for the project and will be based on vendor data and additional conservative assumptions of equipment performance. Turbine emissions and stack parameters, such as flow rate and exit temperature, exhibit some variation with ambient temperature and operating load. In order to calculate the worst-case air quality impacts, a screening analysis will be performed to evaluate each operating scenario (based on operating load and atmospheric conditions) to predict the worst-case facility configuration on a pollutant-specific basis.

In the modeling analysis, maximum impacts will be predicted for maximum (100%) and reduced load conditions. In addition, different ambient temperatures will be evaluated for each load condition. Each of these conditions has unique performance characteristics that affect plume dispersion and thus predicted impacts. This analysis is most relevant to

analyses for short-term impacts. The temperatures selected for the short-term screening analysis will closely reflect the range of possible site conditions. The results of this screening analysis will be used to select the worst-case operational scenarios for the modeling analyses in order to provide maximum operating flexibility. Refined modeling for the permit application will be based on these worst-case scenarios.

The screening modeling will use one complete year of meteorological data and the nested receptor grid described above to determine the worst-case source configuration (i.e., configuration that produces maximum facility impacts). This worst-case source configuration will then be executed with all available meteorological data (here, one complete year of 1997 Arizona Proving Ground met data) and, if necessary, coarse grid impacts will be refined with fine grid receptors spaced 25 meters apart.

Table 3-1
Criteria Pollutant Emissions
Arroyo Energy, Mohave County, Arizona

		NOx[a]	CO[a]	SOx[a]	VOC[a]	PM_{10}
CTG (each)	ppmc	5	6	2.8	5	NA
	lb/hr[b]	7.90	5.77	6.14	2.75	2.7
	Startup[c]	35.5	15.0	6.14	4.50	2.7
Chiller	lb/hr					0.16
	ton/yr					0.68
All Sources	ton/yr[d]	39.71	35.90	32.30	15.54	14.99

[a] ppm measured as ppmvd @ 15% O_2.
[b] worst-case base load operation, not including startup/shutdown.
[c] startup/shutdown worst-case.
[d] CTG emission totals are calculated based on a per turbine average of 2650 hour/yr operation including 300 hr/yr in startup/shutdown mode.

Table 3-2 Toxic Air Pollutant Emissions Arroyo Energy, Mohave County, Arizona			
Hazardous Air Pollutant	Total Emissions (4 units)		Tons/year (4 units)
	#/hr	lb/yr	
1,3-Butadiene	0.0007	1.97	0.001
Acetaldehyde	0.0692	183.25	0.092
Acrolein	0.0111	29.32	0.015
Benzene	0.0207	54.98	0.027
Ethylbenzene	0.0553	146.60	0.073
Formaldehyde	0.3803	1,007.90	0.504
Hexane	0.2975	788.45	0.394
Naphthalene	0.0022	5.96	0.003
PAHs	0.0038	10.08	0.005
Propylene	0.0501	132.86	0.066
Toluene	0.2247	595.58	0.298
Xylene	0.1106	293.21	0.147
Total, All HAPs			4.1

4. DISPERSION MODELING REPORT CONTENT AND ORGANIZATION

Ambient Air Quality Impact Analyses

In evaluating the impacts of the proposed project on ambient air quality, we will model the ambient impacts of the project, add those impacts to background concentrations, and compare the results to the state and federal ambient standards for SO_2, NO_2, PM_{10}, $PM_{2.5}$, and CO. Pursuant to ADEQ's request, the modeling analysis will include an evaluation of the new facility as a standalone project, and separately combined with the emissions of the existing Griffith facility to ensure no NAAQS or AAAQG's are exceeded.

In accordance with US EPA (40 CFR part 51, Appendix W, Sections 11.2.3.2 and 11.2.3.3) and ADEQ guidance, the highest second-high modeled concentrations will be used to demonstrate compliance with the short-term federal standards and the highest modeled concentration will be used to demonstrate compliance with the federal annual and all state standards.

Final Modeling Submittal

The final modeling analyses will also include the following materials:

- Modeling summaries of maximum impacts for each air quality model showing meteorological conditions and receptor location and elevation;
- All modeling outputs (including BPIP and meteorological files) in electronic format, together with a description of all filenames;
- A Plot plan showing emission points, nearby buildings (including dimensions), cross-section lines, property lines, fence lines, roads, and UTM coordinates; and
- A table showing building heights used in the modeling analysis.

Class I Area Impact Methodology

The project is not subject to PSD review because the emissions are not sufficiently high to exceed EPA's review thresholds, and hence, no significant impacts are expected on Class I areas.

Arizona Ambient Air Quality Guideline Analysis

A screening-level analysis will be performed to determine the impact of the toxic air pollutant emissions associated with the Arroyo project. This analysis will be performed according to the ADEQ's Analysis Procedures for Non-PSD sources (ADEQ, 2004).

5. REFERENCES

Arizona Department of Environmental Quality (ADEQ), 2004. Air Dispersion Modeling Guidelines for Arizona Air Quality Permits. ADEQ, December 2004

Briggs, G.A., 1972. Discussion on Chimney Plumes in Neutral and Stable Surroundings. Atmos. Environ. 6:507-510.

National Climatic Data Center (NCDC), 2007. Local Climatological Data (LCD) - Annual Summary with Comparative Data for Yuma for 2006.

South Coast AQMD, 2005. Risk Assessment Procedures for Rules 1401 and 212, Version 7.0, July 1, 2005.

USEPA, 1985. Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) - Revised. EPA-450/4-80-023R.

USEPA, 1986. Guideline on Air Quality Models (Revised). U.S. EPA-45/2-78-027R, Office of Air Quality Planning and Standards, Research Triangle Park, NC.

USEPA, 1987. Supplement A to the Guideline on Air Quality Models (Revised). Office of Air Quality Planning and Standards, Research Triangle Park, NC.

USEPA, 1988. Workbook for Plume Visual Impact Screening and Analysis. Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA-450/4-88-015 (Including October 1992 Revisions).

USEPA, 1990. Supplement B to the Guideline on Air Quality Models (Revised). Office of Air Quality Planning and Standards, Research Triangle Park, NC.

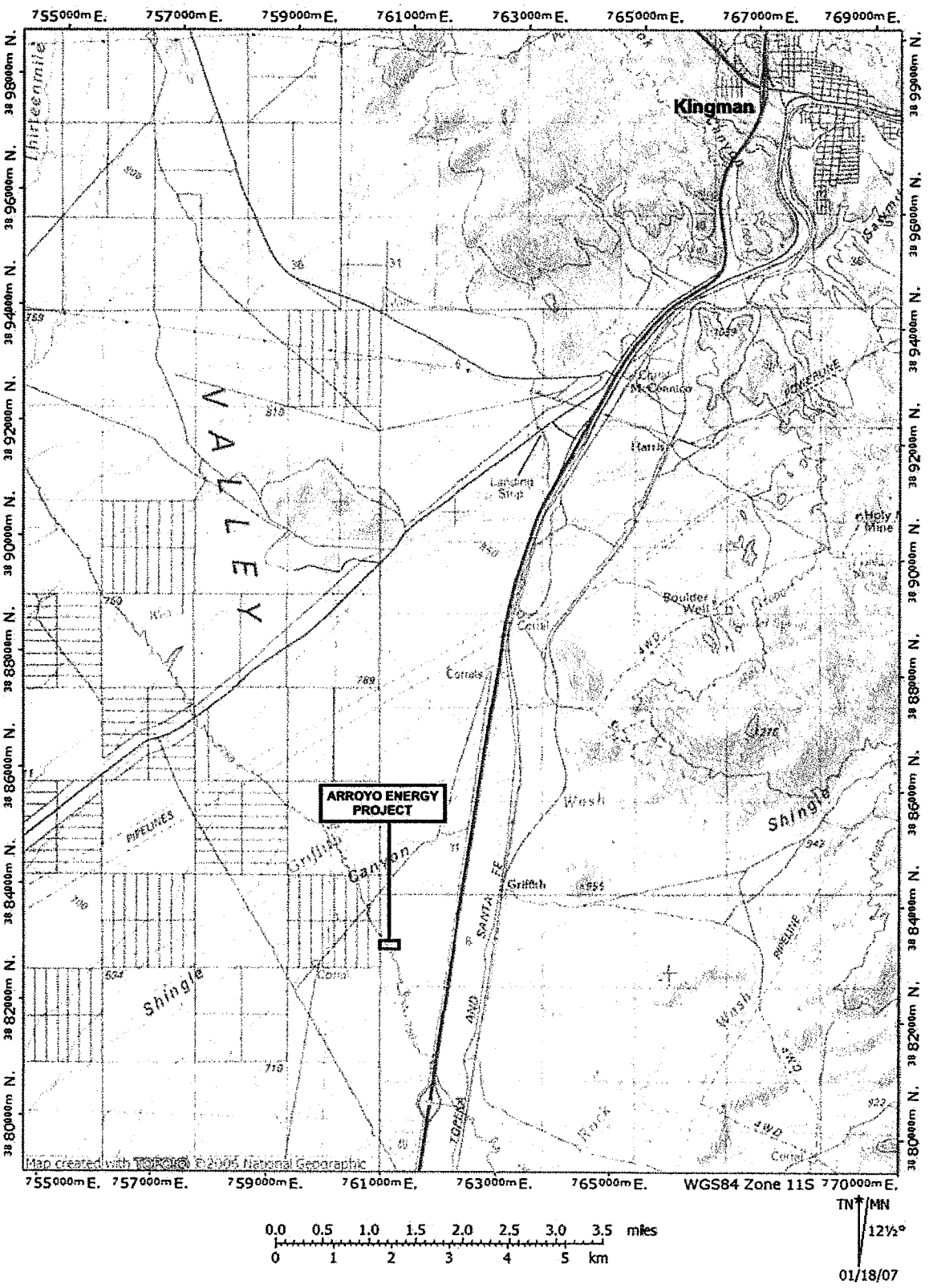
USEPA, 1990. New Source Review Workshop Manual — Draft. Office of Air Quality Planning and Standards, Research Triangle Park, NC.

USEPA, 1992. Procedures for Substituting Values for Missing NWS Meteorological Data for Use in Regulatory Air Quality Models. Dennis Atkinson and Russell F. Lee, Office of Air Quality Planning and Standards, Research Triangle Park, NC. July 7, 1992.

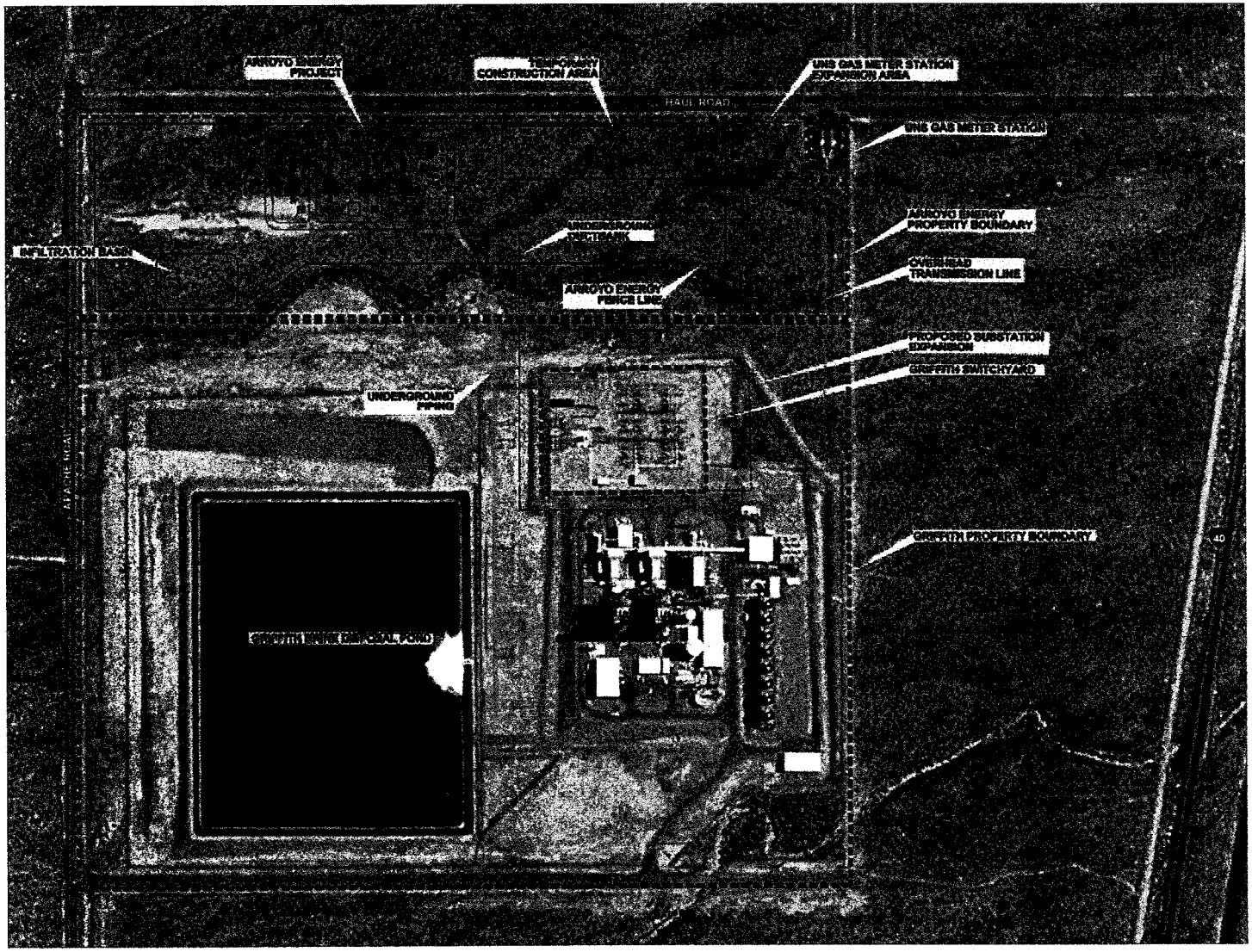
USEPA, 1995. Supplement C to the Guideline on Air Quality Models (revised). Office of Air Quality Planning and Standards, Research Triangle Park, NC.

USEPA, 2003. 40 CFR Part 51, Appendix W. Guideline on Air Quality Models. Last update 5/13/2003.

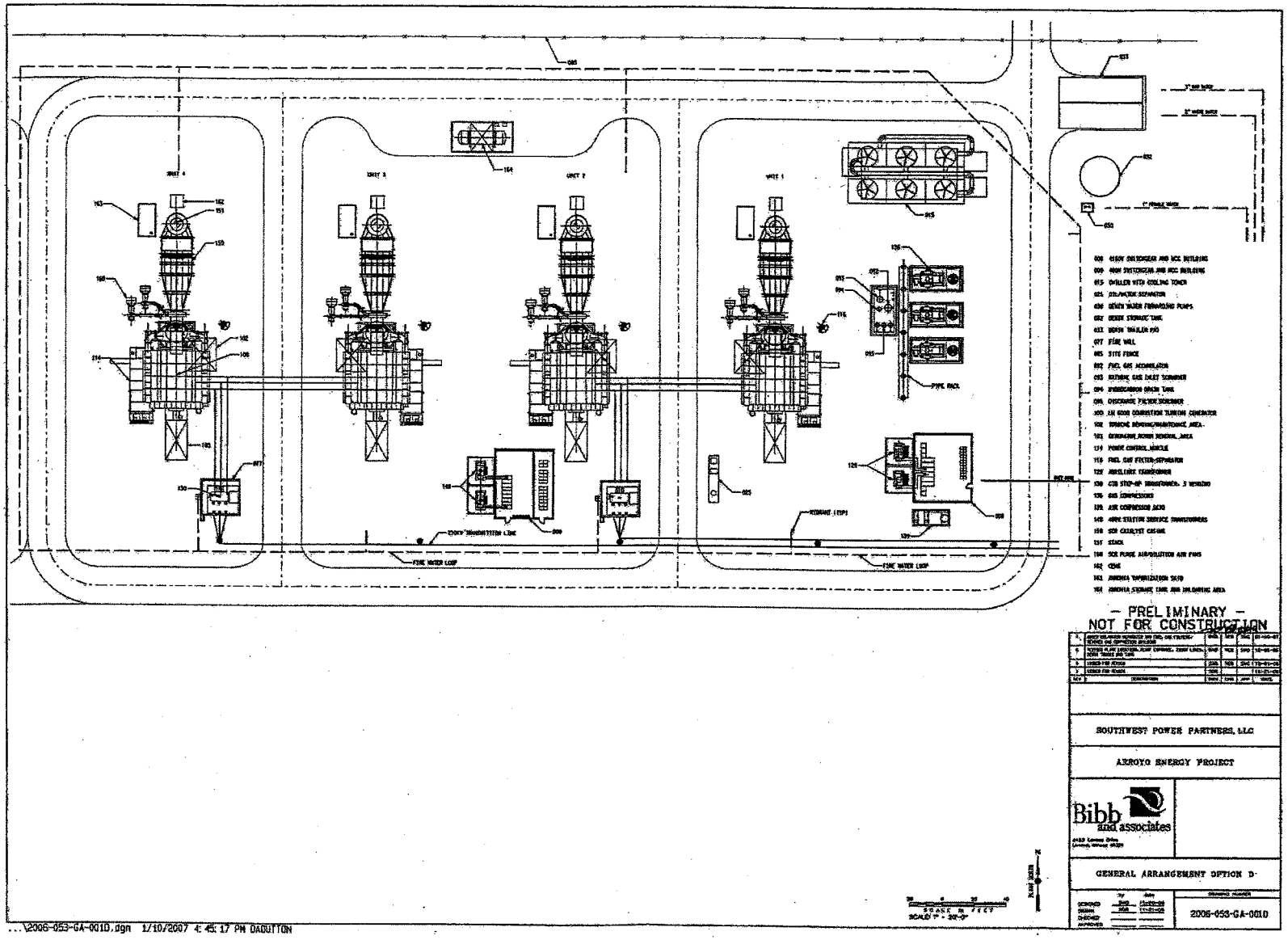
Attachment 1
Regional View of the Project Location

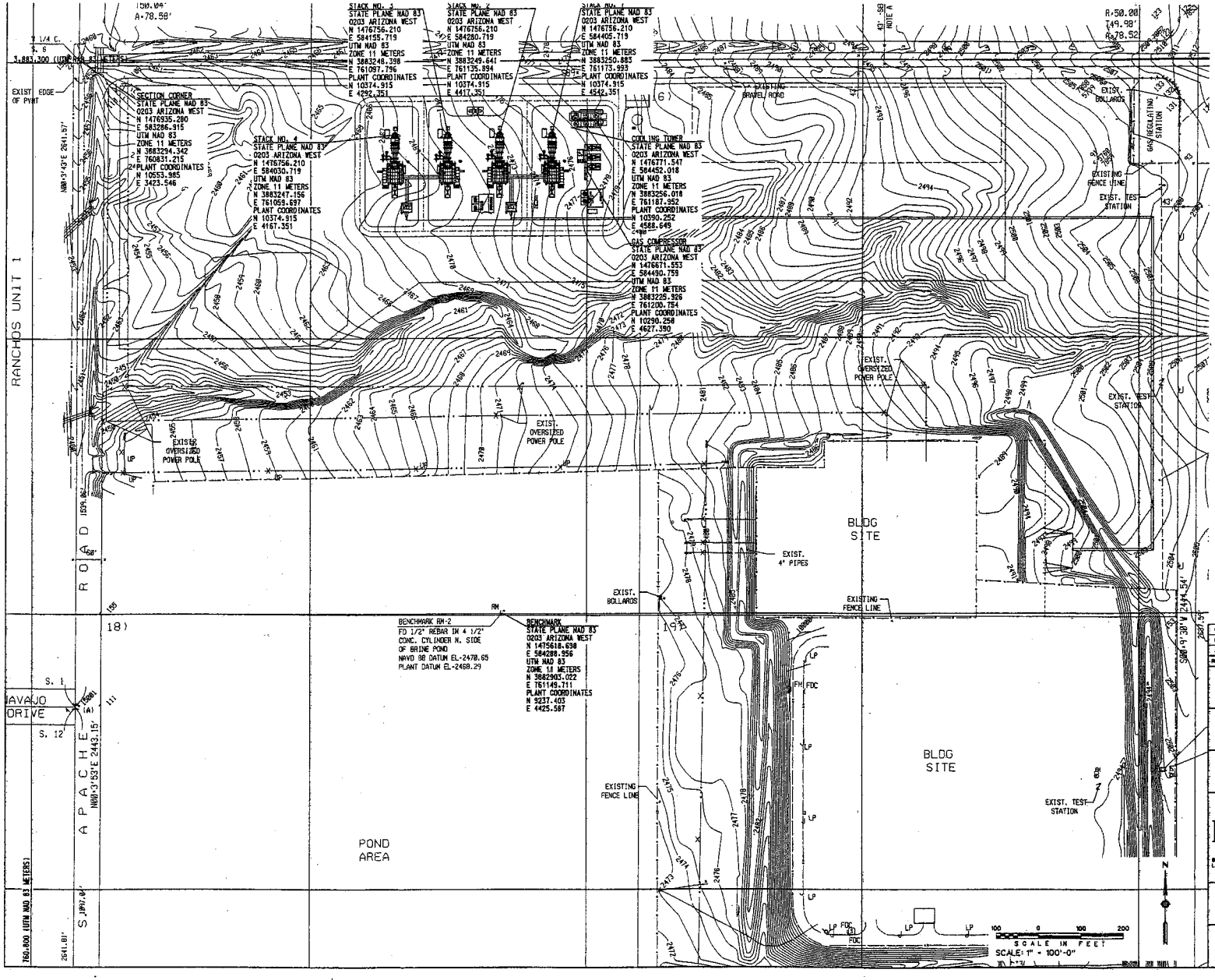


Attachment 2
Aerial View of the Arroyo Energy Project Site



Attachment 3
Detailed Facility Plot Plan





- PRELIMINARY -
NOT FOR CONSTRUCTION

REV	DESCRIPTION	DWN	CHK	APP	DATE
C	CHANGED PROJECT NAME	SMC	RDD	SMD	03-14-07
B	COORDINATES MODIFIED BEING NAD 83, SYSTEM OF NAD 27	SMC	RDD	SMD	02-13-07
A	ISSUED FOR PERMIT	SMC	RDD	SMD	02-02-07

SOUTHWEST POWER PARTNERS, LLC

NORTHERN ARIZONA ENERGY PROJECT

Bibb and associates
8456 Lenexa Drive
Lenexa, Kansas 66214

COORDINATE LOCATION PLAN - UTM

	by	date
DESIGNED	RDD	01-11-07
DRAWN	SMC	01-11-07
CHECKED	RDD	01-18-07
APPROVED	SMD	01-18-07

DRAWING NUMBER
2006-063-CP-300

APPENDIX D

VENDOR-SUPPLIED INFORMATION

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **REBROWN**
Project Info: **Arroyo Energy Project**

Date: **11/28/2006**
Time: **11:54:31 AM**
Version: **3.4.7**

Engine: **LM6000 PC-SPRINT w/ FIGV at -5 Degrees**
Deck Info: **GE125M - Multiple Cardpacks being used, See Cardpack Row Below**
Generator: **BDAX 290ERT 60Hz, 13.8kV, 0.9PF (14839)**
Fuel: **Site Gas Fuel#900-774T, 20443 Btu/lb,LHV**

	Base Load			50% Load		
	Hot	Summer Avg	Cold	Hot	Summer Avg	Cold
Case #	**1**	**2**	**3**	**4**	**5**	**6**
Ambient Conditions						
Dry Bulb, °F	113.0	90.0	25.0	113.0	90.0	25.0
Wet Bulb, °F	74.0	70.0	22.0	74.0	70.0	22.0
RH, %	16.5	38.3	64.4	16.5	38.3	64.4
Altitude, ft	2490.0	2490.0	2490.0	2490.0	2490.0	2490.0
Ambient Pressure, psia	13.421	13.421	13.421	13.421	13.421	13.421
Engine Inlet						
Comp Inlet Temp, °F	48.0	48.0	25.0	48.0	48.0	25.0
RH, %	95.0	95.0	64.4	95.0	95.0	64.4
Conditioning	CHILL	CHILL	NONE	CHILL	CHILL	NONE
Tons or kBtu/hr	1608	1311	0	1598	1303	0
Pressure Losses						
Inlet Loss, inH20	5.00	5.00	5.00	5.00	5.00	5.00
Volute Loss, inH20	4.00	4.00	4.00	4.00	4.00	4.00
Exhaust Loss, inH20	12.00	12.00	12.00	12.00	12.00	12.00
kW, Gen Terms	**45702**	**45702**	**46822**	**22851**	**22851**	**23411**
Est. Btu/kW-hr, LHV	**8530**	**8530**	**8395**	**10385**	**10385**	**10148**
Fuel Flow						
MMBtu/hr, LHV	389.8	389.8	393.1	237.3	237.3	237.6
lb/hr	19068	19068	19228	11608	11608	11621
scf/hr	426,011	426,011	429,617	259,344	259,344	259,672
NOx Control	**Water**	**Water**	**Water**	**Water**	**Water**	**Water**
Water Injection						
lb/hr	20586	20586	21524	8634	8634	9256
Temperature, °F	100.0	100.0	100.0	100.0	100.0	100.0
SPRINT	**LPC**	**LPC**	**OFF**	**LPC**	**LPC**	**OFF**
lb/hr	3905	3905	0	3905	3905	0

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **REBROWN**
Project Info: **Arroyo Energy Project**

Date: **11/28/2006**
Time: **11:54:31 AM**
Version: **3.4.7**

Engine: **LM6000 PC-SPRINT w/ FIGV at -5 Degrees**
Deck Info: **GE125M - Multiple Cardpacks being used, See Cardpack Row Below**
Generator: **BDAX 290ERT 60Hz, 13.8kV, 0.9PF (14839)**
Fuel: **Site Gas Fuel#900-774T, 20443 Btu/lb,LHV**

	Base Load			50% Load		
	Hot	Summer Avg	Cold	Hot	Summer Avg	Cold
Case #	**1**	**2**	**3**	**4**	**5**	**6**
Control Parameters						
HP Speed, RPM	10522	10522	10393	9673	9673	9584
LP Speed, RPM	3600	3600	3600	3600	3600	3600
PS3 - CDP, psia	422.8	422.8	437.0	311.0	311.0	325.3
T3CRF - CDT, °F	998	998	983	853	853	844
T48IN, °R	2040	2040	2002	1778	1778	1730
T48IN, °F	1580	1580	1542	1318	1318	1270
Exhaust Parameters						
Temperature, °F	829.1	829.1	792.3	721.4	721.4	674.6
lb/sec	274.7	274.7	287.6	218.2	218.2	232.2
lb/hr	988896	988896	1035476	785469	785469	835954
Energy, Btu/s- ref 0 °R	91662	91662	92252	65342	65342	66039
Cp, Btu/lb-R	0.2766	0.2766	0.2726	0.2677	0.2677	0.2635
Emissions (NOT FOR USE IN ENVIRONMENTAL PERMITS)						
NOx ppmvd Ref 15% O2	25	25	25	25	25	25
NOx as NO2, lb/hr	39	39	39	24	24	24
CO ppmvd Ref 15% O2	24	24	40	23	23	36
CO, lb/hr	22.91	22.91	38.03	13.22	13.22	21.07
CO2, lb/hr	51423.92	51423.92	51644.95	31397.25	31397.25	31319.54
HC ppmvd Ref 15% O2	3	3	5	2	2	4
HC, lb/hr	1.41	1.41	2.47	0.81	0.81	1.36
SOX as SO2, lb/hr	6.10	6.10	6.15	3.71	3.71	3.72
• Assumed max sulfur, grains/100 scf	5.00	5.00	5.00	5.00	5.00	5.00
VOC ppmvd Ref 15% O2	2.0	2.0	3.0	2.0	2.0	2.4
VOC, lb/hr	0.9	0.9	1.5	0.8	0.8	0.8
Exh Wght % Wet (NOT FOR USE IN ENVIRONMENTAL PERMITS)						
AR	1.2271	1.2271	1.2349	1.2455	1.2455	1.2533
N2	71.9598	71.9598	72.4123	73.0366	73.0366	73.4946
O2	14.7213	14.7213	15.1602	16.7626	16.7626	17.2583
CO2	5.2001	5.2001	4.9876	3.9973	3.9973	3.7466
H20	6.8865	6.8865	6.1986	4.9541	4.9541	4.2425
SO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO	0.0023	0.0023	0.0037	0.0017	0.0017	0.0025
HC	0.0001	0.0001	0.0002	0.0001	0.0001	0.0002
NOX	0.0027	0.0027	0.0026	0.0021	0.0021	0.0020

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **REBROWN**
Project Info: **Arroyo Energy Project**

Date: **11/28/2006**
Time: **11:54:31 AM**
Version: **3.4.7**

Engine: **LM6000 PC-SPRINT w/ FIGV at -5 Degrees**
Deck Info: **GE125M - Multiple Cardpacks being used, See Cardpack Row Below**
Generator: **BDAX 290ERT 60Hz, 13.8kV, 0.9PF (14839)**
Fuel: **Site Gas Fuel#900-774T, 20443 Btu/lb,LHV**

	Base Load			50% Load		
	Hot	Summer Avg	Cold	Hot	Summer Avg	Cold
Case #	**1**	**2**	**3**	**4**	**5**	**6**
Exh Mole % Dry (NOT FOR USE IN ENVIRONMENTAL PERMITS)						
AR	0.9666	0.9666	0.9650	0.9584	0.9584	0.9567
N2	80.8321	80.8321	80.6983	80.1422	80.1422	79.9964
O2	14.4774	14.4774	14.7914	16.1033	16.1033	16.4462
CO2	3.7183	3.7183	3.5381	2.7920	2.7920	2.5959
H20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO	0.0026	0.0026	0.0041	0.0019	0.0019	0.0027
HC	0.0003	0.0003	0.0005	0.0002	0.0002	0.0003
NOX	0.0027	0.0027	0.0026	0.0020	0.0020	0.0019
Exh Mole % Wet (NOT FOR USE IN ENVIRONMENTAL PERMITS)						
AR	0.8629	0.8629	0.8714	0.8837	0.8837	0.8926
N2	72.1528	72.1528	72.8705	73.8956	73.8956	74.6368
O2	12.9229	12.9229	13.3566	14.8482	14.8482	15.3443
CO2	3.3190	3.3190	3.1949	2.5744	2.5744	2.4219
H20	10.7374	10.7374	9.7001	7.7944	7.7944	6.6998
SO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO	0.0023	0.0023	0.0037	0.0017	0.0017	0.0026
HC	0.0003	0.0003	0.0004	0.0002	0.0002	0.0003
NOX	0.0024	0.0024	0.0023	0.0019	0.0019	0.0018

Aero Energy Fuel Number	**900-774 (Design Gas)**	
	Volume %	**Weight %**
Hydrogen	0.0000	0.0000
Methane	96.0700	91.0132
Ethane	1.4900	2.6458
Ethylene	0.0000	0.0000
Propane	0.3300	0.8593
Propylene	0.0000	0.0000
Butane	0.1200	0.4119
Butylene	0.0000	0.0000
Butadiene	0.0000	0.0000
Pentane	0.0300	0.1278
Cyclopentane	0.0000	0.0000
Hexane	0.0300	0.1527
Heptane	0.0000	0.0000
Carbon Monoxide	0.0000	0.0000
Carbon Dioxide	1.6900	4.3923

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **REBROWN**
Project Info: **Arroyo Energy Project**

Date: **11/28/2006**
Time: **11:54:31 AM**
Version: **3.4.7**

Engine: **LM6000 PC-SPRINT w/ FIGV at -5 Degrees**
Deck Info: **GE125M - Multiple Cardpacks being used, See Cardpack Row Below**
Generator: **BDAX 290ERT 60Hz, 13.8kV, 0.9PF (14839)**
Fuel: **Site Gas Fuel#900-774T, 20443 Btu/lb,LHV**

	Base Load			50% Load		
	Hot	Summer Avg	Cold	Hot	Summer Avg	Cold
Case #	**1**	**2**	**3**	**4**	**5**	**6**
Nitrogen	0.2400	0.3970				
Water Vapor	0.0000	0.0000				
Oxygen	0.0000	0.0000				
Hydrogen Sulfide	0.0000	0.0000				
Ammonia	0.0000	0.0000				
Btu/lb, LHV	20443					
Btu/scf, LHV	915					
Btu/scf, HHV	1014					
Btu/lb, HHV	22666					
Fuel Temp, °F	100.0					
NOx Scalar	0.981					
Specific Gravity	0.58					
Engine Exhaust						
Exhaust MW	28.1	28.1	28.2	28.3	28.3	28.4
Inlet Flow Wet, pps	266.0	266.0	279.5	264.4	264.4	274.1
Inlet Flow Dry, pps	264.1	264.1	279.0	262.5	262.5	273.6
Shaft HP	62383	62383	63903	31453	31453	32209
Generator Information						
Capacity kW	64115	55225	72280	47526	55225	72280
Efficiency	0.975	0.982	0.983	0.974	0.974	0.975
Inlet Temp, °F	113.0	90.0	25.0	113.0	90.0	25.0
Gear Box Loss	N/A	N/A	N/A	N/A	N/A	N/A
TRQ48, Torque Limit Cold End	112560	112560	116273	67954	67954	71282
Correct Control Parameters						
PS3JQA, psia	428.569	428.569	442.962	315.243	315.243	329.738
XN25R3, rpm	6282	6282	6238	6062	6062	6024
8th Stage Bleed						
Flow, pps	0.0	0.0	0.0	0.0	0.0	0.0
Pressure, psia	0.000	0.000	0.000	0.000	0.000	0.000
Temperature, °R	0	0	0	0	0	0

Estimated Average Engine Performance NOT FOR GUARANTEE, REFER TO PROJECT F&ID FOR DESIGN

GE Energy

Performance By: **REBROWN**
Project Info: **Arroyo Energy Project**

Date: **11/28/2006**
Time: **11:54:31 AM**
Version: **3.4.7**

Engine: **LM6000 PC-SPRINT w/ FIGV at -5 Degrees**
Deck Info: **GE125M - Multiple Cardpacks being used, See Cardpack Row Below**
Generator: **BDAX 290ERT 60Hz, 13.8kV, 0.9PF (14839)**
Fuel: **Site Gas Fuel#900-774T, 20443 Btu/lb,LHV**

	Base Load			50% Load		
	Hot	Summer Avg	Cold	Hot	Summer Avg	Cold
Case #	**1**	**2**	**3**	**4**	**5**	**6**
CDP Bleed						
Flow, pps	0.0	0.0	0.0	0.0	0.0	0.0
Pressure, psia	0.000	0.000	0.000	0.000	0.000	0.000
Est. Gas Pressure at Baseplate, psia	**563.6**	**563.6**	**576.2**	**391.0**	**391.0**	**402.6**
CardPack	**88u**	**88u**	**88v**	**88u**	**88u**	**88v**
Exhaust CardPack	**7f5**	**7f5**	**7f5**	**7f5**	**7f5**	**7f5**
NSI	**304**	**304**	**315**	**0**	**0**	**0**
NSI	**0**	**0**	**0**	**0**	**0**	**0**
NSI	**0**	**0**	**0**	**0**	**0**	**0**

Certificate of Analysis

SINCE 1985

Quality Controlled Through Analysis

10630 FALLSTONE RD. HOUSTON, TEXAS 77099
P.O. BOX 741905, HOUSTON, TEXAS 77274

TEL: (281) 495-2400
FAX: (281) 495-2410

CLIENT:	Griffith Energy Project	**REQUESTED BY:**	Mr. Brian Henderson
SAMPLE:	Natural Gas Sample CT # 1 (Golden Valley, AZ)	**REPORT DATE:**	October 18, 2006
LABORATORY NO:	43161-01	**PURCHASE ORDER NO:**	Pending

TEST **RESULTS**

Composition of Natural Gas by Gas Chromatography, ASTM D 1945:

TEST	***Mol %***
Nitrogen	0.314
Hydrogen	0.081
Oxygen	0.004
Carbon dioxide	1.681
Carbon Monoxide	0.000
Methane	95.979
Ethane	1.422
Propane	0.338
Iso-butane	0.060
N-butane	0.059
Iso-Pentane	0.019
N-pentane	0.012
Hexanes Plus	0.031
TOTAL	**100.000**

Caloric Value and Specific Gravity of Gases, ASTM D 3588:

Specific Gravity at 60°F (air=1)	0.5844

Calculated B.T.U./cu.ft. @ 14.650 psia and 60°F

NET (Dry basis)	909.6
Gross (Dry basis)	1,009.9

Calculated B.T.U./lb.

NET (Dry basis)	20,396.4
Gross (Dry basis)	22,646.8

Total Sulfur by Microcoulometer, ASTM D 3246, ppm	<1.0
Total Sulfur by Microcoulometer, ASTM D 3246, Grains/100Scf.....	<0.032
Organically Bound nitrogen by Chemiluminesence, ASTM D 4629, ppm	2.3

Respectfully submitted
FOR TEXAS OILTECH LABORATORIES, L.P.

A. Phil Sorurbakhsh
Director of Laboratory Operations

Cert. No. 5085

Certificate of Analysis

SINCE 1985
Quality Controlled Through Analysis

10630 FALLSTONE RD. HOUSTON, TEXAS 77099
P.O. BOX 741905, HOUSTON, TEXAS 77274

TEL: (281) 495-2400
FAX: (281) 495-2410

CLIENT:	Griffith Energy Project	**REQUESTED BY:**	Mr. Brian Henderson
SAMPLE:	Natural Gas Sample CT # 2 (Golden Valley, AZ)	**REPORT DATE:**	October 18, 2006
LABORATORY NO:	43161-02	**PURCHASE ORDER NO:**	Pending

TEST **RESULTS**

Composition of Natural Gas by Gas Chromatography, ASTM D 1945:

TEST	*Mol %*
Nitrogen	0.312
Hydrogen	0.074
Oxygen	0.009
Carbon dioxide	1.676
Carbon Monoxide	0.000
Methane	95.974
Ethane	1.423
Propane	0.340
Iso-butane	0.061
N-butane	0.060
Iso-Pentane	0.020
N-pentane	0.013
Hexanes Plus	0.038
TOTAL	**100.000**

Caloric Value and Specific Gravity of Gases, ASTM D 3588:

Specific Gravity at 60°F (air=1)	0.5846

Calculated B.T.U./cu.ft. @ 14.650 psia and 60°F

NET **(Dry basis)**	910.0
Gross **(Dry basis)**	1,010.4

Calculated B.T.U./lb.

NET (Dry basis)	20,397.2
Gross **(Dry basis)**	22,647.4

Total Sulfur by Microcoulometer, ASTM D 3246, ppm	<1.0
Total Sulfur by Microcoulometer, ASTM D 3246, Grains/100Scf.....	<0.032
Organically Bound nitrogen by Chemiluminesence, ASTM D 4629, ppm	2.2

Respectfully submitted
FOR TEXAS OILTECH LABORATORIES, L.P.

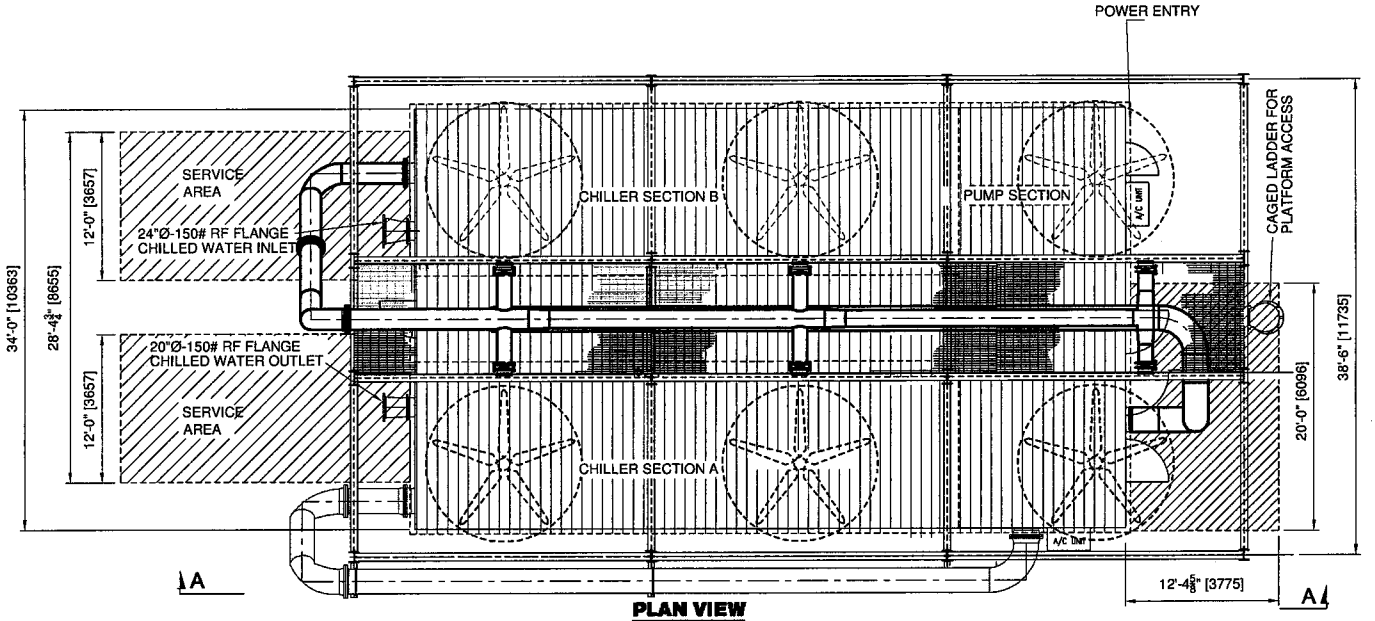
A. Phil Sorurbakhsh
Director of Laboratory Operations

Cert. No. 5085

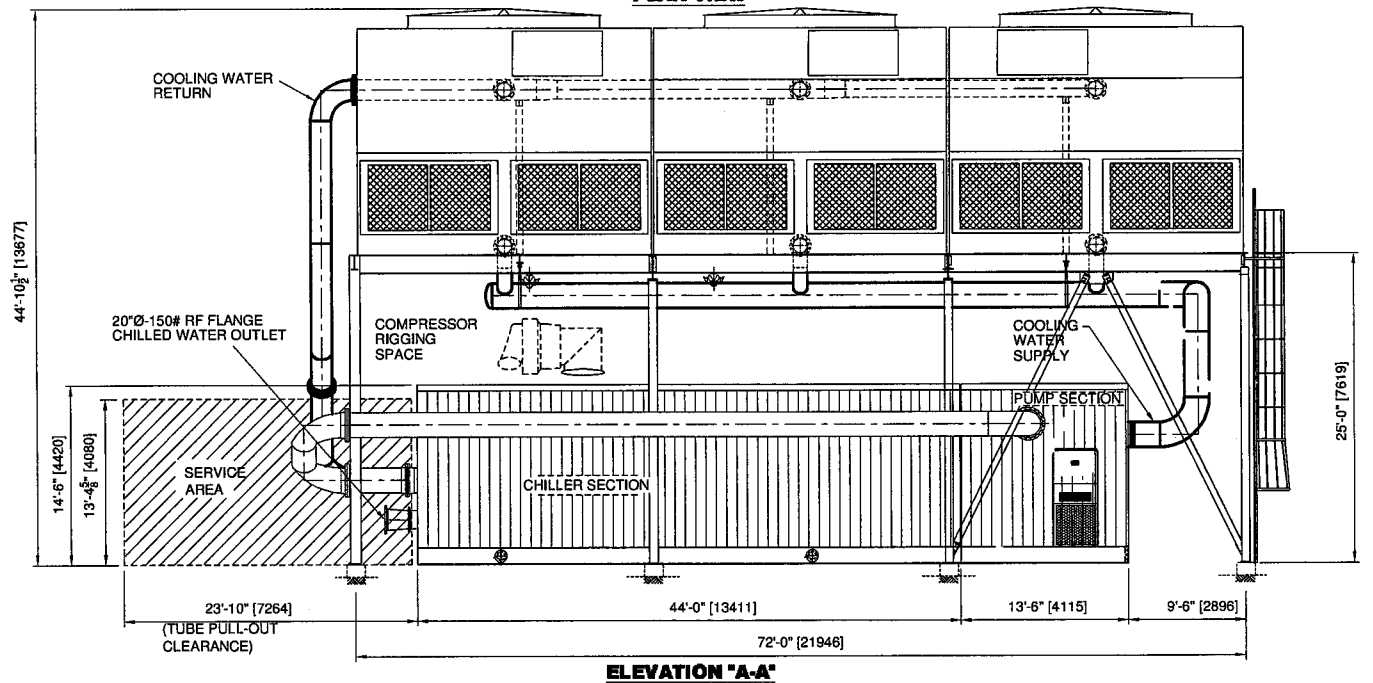
MODELS G-60C & G-70C

Water-Cooled Series Super-Duplex Centrifugal Compressor System
Available in 60 Hz only

Nominal Capacity:	5300 to 8000 Tons (18,639 to 28134 KWth)
Nominal Parasitics:	0.690 kw/ton (COP: 5.10)
Maximum Flow Rate:	8,800 gpm (555 L/s)



PLAN VIEW



ELEVATION "A-A"

EQUIPMENT		SHIPPING WEIGHT, LB (KG.)		SHIPPING DIMENSIONS, FT. [MM]		
ITEM	QTY.	UNIT WT.	TOTAL WEIGHT	LENGTH	WIDTH	HEIGHT
CHILLER SECTION	2	125,000 (56,818)	250,000 (113,636)	44'-0" [13411]	13'-6" [4115]	13'-6" [4115]
PUMP SECTION	1	85,000 (38,636)	85,000 (38,636)	34'-0" [10363]	13'-6" [4115]	13'-6" [4115]
WALKWAY SKID	1	12,000 (5,455)	12,000 (5,455)	44'-0" [13411]	7'-0" [2133]	1'-4" [406]
CT UPPER SECTION	6	13,660 (6,209)	81,960 (37,255)	24'-0" [7315]	14'-0" [4267]	11'-8" [3558]
CT LOWER SECTION	6	7,180 (3,264)	43,080 (19,582)	24'-0" [7315]	14'-0" [4267]	8'-3" [2514]
CT STRUCTURE	LOT	70,000 (31,818)	70,000 (31,818)	PALLETIZED AND SHIPPED IN TWO 40-FT TRAILER		
CT EXT. PIPING	LOT	15,000 (6,818)	15,000 (6,818)	PALLETIZED AND SHIPPED IN TWO 40-FT TRAILER		

EST. FOUNDATION WEIGHTS, LB (KG.)	
ITEM	OPERATING WEIGHT
CHILLER/PUMP SKID	400,000 (181,800)
CT, STRUCT. & PIPING	370,000 (168,200)

NOTES:
1. WEIGHTS SHOWN ARE ESTIMATED ONLY.
2. THIS DWG. NOT TO BE USED FOR CONSTRUCTION.
3. DIMENSIONS SHOWN IN [ ] ARE IN MILLIMETERS.

RELEASED DATE: 09/02/04 - 2:16pm

APPENDIX E

ACID RAIN PERMIT APPLICATION FORM

United States
Environmental Protection Agency
Acid Rain Program

OMB No. 2060-0258

Acid Rain Permit Application

For more information, see instructions and refer to 40 CFR 72.30 and 72.31

This submission is: ☒ **New** ☐ **Revised**

STEP 1

Identify the source by plant name, State, and ORIS code.

Plant Name	State	ORIS Code
Northern Arizona Energy Project	AZ	56507

STEP 2

Enter the unit ID# for every affected unit at the affected source in column "a." For new units, enter the requested information in columns "c" and "d."

a	b	c	D
Unit ID#	Unit Will Hold Allowances in Accordance with 40 CFR 72.9(c)(1)	New Units Commence Operation Date	New Units Monitor Certification Deadline
CT1	Yes	05/31/08	11/31/08
CT2	Yes	05/31/08	11/31/08
CT3	Yes	05/31/08	11/31/08
CT4	Yes	05/31/08	11/31/08
	Yes		
	Yes		
	Yes		
	Yes		
	Yes		
	Yes		
	Yes		
	Yes Yes Yes Yes Yes		

STEP 3

Read the standard requirements

Permit Requirements

(1) The designated representative of each affected source and each affected unit at the source shall:
(i) Submit a complete Acid Rain permit application (including a compliance plan) under 40 CFR part 72 in accordance with the deadlines specified in 40 CFR 72.30; and
(ii) Submit in a timely manner any supplemental information that the permitting authority determines is necessary in order to review an Acid Rain permit application and issue or deny an Acid Rain permit;
(2) The owners and operators of each affected source and each affected unit at the source shall:
(i) Operate the unit in compliance with a complete Acid Rain permit application or a superseding Acid Rain permit issued by the permitting authority; and
(ii) Have an Acid Rain Permit.

Monitoring Requirements

(1) The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR part 75.
(2) The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program.
(3) The requirements of 40 CFR part 75 shall not affect the responsibility of the owners and operators to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements of the Act and other provisions of the operating permit for the source.

Sulfur Dioxide Requirements

(1) The owners and operators of each source and each affected unit at the source shall:
(i) Hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR 73.34(c)), or in the compliance subaccount of another affected unit at the same source to the extent provided in 40 CFR 73.35(b)(3), not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and
(ii) Comply with the applicable Acid Rain emissions limitations for sulfur dioxide.
(2) Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act.
(3) An affected unit shall be subject to the requirements under paragraph (1) of the sulfur dioxide requirements as follows:
(i) Starting January 1, 2000, an affected unit under 40 CFR 72.6(a)(2); or
(ii) Starting on the later of January 1, 2000 or the deadline for monitor certification under 40 CFR part 75, an affected unit under 40 CFR 72.6(a)(3).
(4) Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program.
(5) An allowance shall not be deducted in order to comply with the requirements under paragraph (1) of the sulfur dioxide requirements prior to the calendar year for which the allowance was allocated.
(6) An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization.
(7) An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right.

STEP 3, Cont'd.

Nitrogen Oxides Requirements The owners and operators of the source and each affected unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides.

Excess Emissions Requirements

(1) The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR part 77.
(2) The owners and operators of an affected unit that has excess emissions in any calendar year shall:
(i) Pay without demand the penalty required, and pay upon demand the interest on that penalty, as required by 40 CFR part 77; and
(ii) Comply with the terms of an approved offset plan, as required by 40 CFR part 77.

Recordkeeping and Reporting Requirements

(1)Unless otherwise provided, the owners and operators of the source and each affected unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time prior to the end of 5 years, in writing by the Administrator or permitting authority:
(i) The certificate of representation for the designated representative for the source and each affected unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative;
(ii) All emissions monitoring information, in accordance with 40 CFR part 75, provided that to the extent that 40 CFR part 75 provides for a 3-year period for recordkeeping, the 3-year period shall apply.
(iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and,
(iv) Copies of all documents used to complete an Acid Rain permit application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.
(2)The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR part 72 subpart I and 40 CFR part 75.

Liability

(1) Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete Acid Rain permit application, an Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to section 113(c) of the Act.
(2) Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to section 113(c) of the Act and 18 U.S.C. 1001.
(3) No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect.
(4) Each affected source and each affected unit shall meet the requirements of the Acid Rain Program.

Step 3, Cont'd.

Liability, Cont'd.

(5) Any provision of the Acid Rain Program that applies to an affected source (including a provision applicable to the designated representative of an affected source) shall also apply to the owners and operators of such source and of the affected units at the source.
(6) Any provision of the Acid Rain Program that applies to an affected unit (including a provision applicable to the designated representative of an affected unit) shall also apply to the owners and operators of such unit. Except as provided under 40 CFR 72.44 (Phase II repowering extension plans) and 40 CFR 76.11 (NO_x averaging plans), and except with regard to the requirements applicable to units with a common stack under 40 CFR part 75 (including 40 CFR 75.16, 75.17, and 75.18), the owners and operators and the designated representative of one affected unit shall not be liable for any violation by any other affected unit of which they are not owners or operators or the designated representative and that is located at a source of which they are not owners or operators or the designated representative.
(7) Each violation of a provision of 40 CFR parts 72, 73, 74, 75, 76, 77, and 78 by an affected source or affected unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act.

Effect on Other Authorities

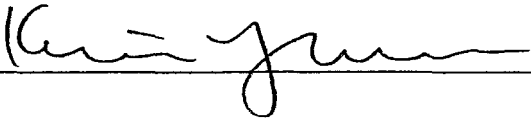
No provision of the Acid Rain Program, an Acid Rain permit application, an Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8 shall be construed as:
(1) Except as expressly provided in title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an affected source or affected unit from compliance with any other provision of the Act, including the provisions of title I of the Act relating to applicable National Ambient Air Quality Standards or State Implementation Plans;
(2) Limiting the number of allowances a unit can hold; *provided,* that the number of allowances held by the unit shall not affect the source's obligation to comply with any other provisions of the Act;
(3) Requiring a change of any kind in any State law regulating electric utility rates and charges, affecting any State law regarding such State regulation, or limiting such State regulation, including any prudence review requirements under such State law;
(4) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or,
(5) Interfering with or impairing any program for competitive bidding for power supply in a State in which such program is established.

STEP 4

Read the certification statement, sign, and date

Certification

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name Kevin R. Johnson	
Signature 	Date March 23, 2007

EPA

Acid Rain Program

Instructions for Acid Rain Permit Application (40 CFR 72.30- 72.31)

The Acid Rain Program requires the designated representative to submit an Acid Rain permit application for each source with an affected unit. A complete Certificate of Representation must be received by EPA before the permit application is submitted to the title V permitting authority. A complete Acid Rain permit application, once submitted, is binding on the owners and operators of the affected source and is enforceable in the absence of a permit until the title V permitting authority either issues a permit to the source or disapproves the application.

Please type or print. The alternate designated representative may sign in lieu of the designated representative. If assistance is needed, contact the title V permitting authority.

STEP 1 Use the plant name and ORIS Code listed on the Certificate of Representation for the plant. An ORIS code is a 4 digit number assigned by the Energy Information Agency (EIA) at the U.S. Department of Energy to power plants owned by utilities. If the plant is not owned by a utility but has a 5 digit facility code (also assigned by EIA), use the facility code. If no code has been assigned or if there is uncertainty regarding what the code number is, contact EIA at (202) 287-1730 (for ORIS codes), or (202) 287-1927 (for facility codes).

STEP 2 For column "a," identify each affected unit at the affected source by providing the appropriate unit identification numbers, consistent with the unit identification numbers entered on the Certificate of Representation and with unit identification numbers used in reporting to DOE and/or EIA. For new units without identification numbers, owners and operators may assign such numbers consistent with EIA and DOE requirements.

For columns "c" and "d," enter the commence operation date(s) and monitor certification deadline(s) for new units in accordance with 40 CFR 72.2 and 75.4, respectively.

Submission Deadlines

For new units, an initial Acid Rain permit application must be submitted to the title V permitting authority 24 months before the date the unit commences operation. Acid Rain permit renewal applications must be submitted at least 6 months in advance of the expiration of the acid rain portion of a title V permit, or such longer time as provided for under the title V permitting authority's operating permits regulation.

Submission Instructions

Submit this form to the appropriate title V permitting authority. If you have questions regarding this form, contact your local, State, or EPA Regional Acid Rain contact, or call EPA's Acid Rain Hotline at (202) 343-9620.

Paperwork Burden Estimate

The burden on the public for collecting and reporting information under this request is estimated at 17 hours per response. Send comments regarding this collection of information, including suggestions for reducing the burden, to: Chief, Information Policy Branch (PM-223), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave. NW, Washington, D.C. 20460; and to: Paperwork Reduction Project (OMB#2060-0258), Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503. ***Do not submit forms to these addresses; see the submission instructions above.***

United States
Environmental Protection Agency
Acid Rain and CAIR Trading Programs

OMB Nos. 2060-0258, 2060-0570, and 2060-0584

Certificate of Representation

For more information, see instructions and 40 CFR 72.24, 40 CFR 96.113, 96.213, or 96.313, or a comparable state regulation under the Clean Air Interstate Rule (CAIR) NO_X Annual, SO_2, and NO_X Ozone Season Trading Programs, or 40 CFR 97.113, 97.213, or 97.313, as applicable.

This submission is: ☒ New ☐ Revised (revised submissions must be complete; see instructions)

FACILITY (SOURCE) INFORMATION

STEP 1
Provide information for the facility (source).

Facility (Source) Name Northern Arizona Energy Project	State AZ	Plant Code 56507
County Name Mohave		
Latitude 350330	Longitude 1140822	

STEP 2
Enter requested information for the designated representative.

Name Kevin R. Johnson	Title Vice President
Company Name Northern Arizona Energy, LLC	
Address 1735 Technology Dr, Ste 820, San Jose, CA 95110	
Phone Number (408) 572-1290	Fax Number (408) 392-9757
E-mail address KJohnson@lspower.com	

STEP 3
Enter requested information for the alternate designated representative.

Name Randall Hickok	Title
Company Name Northern Arizona Energy, LLC	
Address 1735 Technology Dr, Ste 820, San Jose, CA 95110	
Phone Number	Fax Number
E-mail address RHickok@lspower.com	

Facility (Source) Name (from Step 1) Northern Arizona Energy Project

UNIT INFORMATION

STEP 4: **Complete one page for each unit located at the facility identified in STEP 1** (i.e., for each boiler, simple cycle combustion turbine, or combined cycle combustion turbine.) Do not list duct burners. Indicate each program to which the unit is subject, and enter all other unit-specific information, including the name of each owner and operator of the unit and the generator ID number and nameplate capacity of each generator served by the unit. If the unit is subject to a program, then the facility (source) is also subject. (For units subject to the NO_X Budget Trading Program, a separate "Account Certificate of Representation" form must be submitted to meet requirements under that program.)

Applicable Program(s): √ Acid Rain ~ CAIR NO_X Annual ~ CAIR SO_2 ~ CAIR NO_X Ozone Season

CT1	CT	Source Category Small Power Generator	Generator ID Number	Acid Rain Nameplate Capacity (MWe)	CAIR Nameplate Capacity (MWe)
Unit ID#	Unit Type	NAICS Code 221119	CTG1	45	

Date unit began (or will begin) serving any generator producing electricity for sale (including test generation) (mm/dd/yyyy): 05/01/2008	Check One: Actual ~ Projected √

Company Name: Northern Arizona Energy, LLC	√ Owner √ Operator
Company Name:	~ Owner ~ Operator
Company Name:	~ Owner ~ Operator
Company Name:	~ Owner ~ Operator
Company Name:	~ Owner ~ Operator

Facility (Source) Name (from Step 1) Northern Arizona Energy Project

UNIT INFORMATION

STEP 4: Complete one page for each unit located at the facility identified in STEP 1 (i.e., for each boiler, simple cycle combustion turbine, or combined cycle combustion turbine.) Do not list duct burners. Indicate each program to which the unit is subject, and enter all other unit-specific information, including the name of each owner and operator of the unit and the generator ID number and nameplate capacity of each generator served by the unit. If the unit is subject to a program, then the facility (source) is also subject. (For units subject to the NO_X Budget Trading Program, a separate "Account Certificate of Representation" form must be submitted to meet requirements under that program.)

Applicable Program(s): √ Acid Rain ~ CAIR NO_X Annual ~ CAIR SO_2 ~ CAIR NO_X Ozone Season

CT2 Unit ID#	CT Unit Type	Source Category Small Power Generator NAICS Code 221119	Generator ID Number	Acid Rain Nameplate Capacity (MWe)	CAIR Nameplate Capacity (MWe)
			CTG2	45	
Date unit began (or will begin) serving any generator producing electricity for sale (including test generation) (mm/dd/yyyy): 05/01/2008		Check One: Actual ~ Projected √			

Company Name: Northern Arizona Energy, LLC	√ Owner √ Operator
Company Name:	~ Owner ~ Operator
Company Name:	~ Owner ~ Operator
Company Name:	~ Owner ~ Operator
Company Name:	~ Owner ~ Operator

Facility (Source) Name (from Step 1) Northern Arizona Energy Project

UNIT INFORMATION

STEP 4: **Complete one page for each unit located at the facility identified in STEP 1** (i.e., for each boiler, simple cycle combustion turbine, or combined cycle combustion turbine.) Do not list duct burners. Indicate each program to which the unit is subject, and enter all other unit-specific information, including the name of each owner and operator of the unit and the generator ID number and nameplate capacity of each generator served by the unit. If the unit is subject to a program, then the facility (source) is also subject. (For units subject to the NO_X Budget Trading Program, a separate "Account Certificate of Representation" form must be submitted to meet requirements under that program.)

Applicable Program(s): √ Acid Rain ~ CAIR NO_X Annual ~ CAIR SO_2 ~ CAIR NO_X Ozone Season

CT3 Unit ID#	CT Unit Type	Source Category Small Power Generator NAICS Code 221119	Generator ID Number	Acid Rain Nameplate Capacity (MWe)	CAIR Nameplate Capacity (MWe)
			CTG3	45	
Date unit began (or will begin) serving any generator producing electricity for sale (including test generation) (mm/dd/yyyy): 05/01/2008		Check One: Actual ~ Projected √			

Company Name: Northern Arizona Energy, LLC	√ Owner √ Operator
Company Name:	~ Owner ~ Operator
Company Name:	~ Owner ~ Operator
Company Name:	~ Owner ~ Operator
Company Name:	~ Owner ~ Operator

UNIT INFORMATION

STEP 4: Complete one page for each unit located at the facility identified in STEP 1 (i.e., for each boiler, simple cycle combustion turbine, or combined cycle combustion turbine.) Do not list duct burners. Indicate each program to which the unit is subject, and enter all other unit-specific information, including the name of each owner and operator of the unit and the generator ID number and nameplate capacity of each generator served by the unit. If the unit is subject to a program, then the facility (source) is also subject. (For units subject to the NO_X Budget Trading Program, a separate "Account Certificate of Representation" form must be submitted to meet requirements under that program.)

Applicable Program(s): √ Acid Rain ~ CAIR NO_X Annual ~ CAIR SO_2 ~ CAIR NO_X Ozone Season

CT4 Unit ID#	CT Unit Type	Source Category Small Power Generator NAICS Code 221119	Generator ID Number	Acid Rain Nameplate Capacity (MWe)	CAIR Nameplate Capacity (MWe)
			CTG4	45	
Date unit began (or will begin) serving any generator producing electricity for sale (including test generation) (mm/dd/yyyy): 05/01/2008		Check One: Actual ~ Projected √			

Company Name: Northern Arizona Energy, LLC	√ Owner √ Operator
Company Name:	~ Owner ~ Operator
Company Name:	~ Owner ~ Operator
Company Name:	~ Owner ~ Operator
Company Name:	~ Owner ~ Operator

STEP 5: Read the certifications, sign and date.

Acid Rain Program

I certify that I was selected as the designated representative or alternate designated representative (as applicable) by an agreement binding on the owners and operators of the affected source and each affected unit at the source (i.e., the source and each unit subject to the Acid Rain Program, as indicated in AApplicable Program(s)@ in Step 4).

I certify that I have all necessary authority to carry out my duties and responsibilities under the Acid Rain Program on behalf of the owners and operators of the affected source and each affected unit at the source and that each such owner and operator shall be fully bound by my representations, actions, inactions, or submissions.

I certify that the owners and operators of the affected source and each affected unit at the source shall be bound by any order issued to me by the Administrator, the permitting authority, or a court regarding the source or unit.

Where there are multiple holders of a legal or equitable title to, or a leasehold interest in, an affected unit, or where a utility or industrial customer purchases power from an affected unit under a life-of-the-unit, firm power contractual arrangement, I certify that:

I have given a written notice of my selection as the designated representative or alternate designated representative (as applicable) and of the agreement by which I was selected to each owner and operator of the affected source and each affected unit at the source; and

Allowances, and proceeds of transactions involving allowances, will be deemed to be held or distributed in proportion to each holder's legal, equitable, leasehold, or contractual reservation or entitlement, except that, if such multiple holders have expressly provided for a different distribution of allowances, allowances and proceeds of transactions involving allowances will be deemed to be held or distributed in accordance with the contract.

Clean Air Interstate Rule (CAIR) NO_X Annual Trading Program

I certify that I was selected as the CAIR designated representative or alternate CAIR designated representative (as applicable), by an agreement binding on the owners and operators of the CAIR NO_X source and each CAIR NO_X unit at the source (i.e., the source and each unit subject to the CAIR NO_X Annual Trading Program, as indicated in AApplicable Program(s)@ in Step 4).

I certify that I have all necessary authority to carry out my duties and responsibilities under the CAIR NO_X Annual Trading Program on behalf of the owners and operators of the CAIR NO_X source and each CAIR NO_X unit at the source and that each such owner and operator shall be fully bound by my representations, actions, inactions, or submissions.

I certify that the owners and operators of the CAIR NO_X source and each CAIR NO_X unit at the source shall be bound by any order issued to me by the Administrator, the permitting authority, or a court regarding the source or unit.

Where there are multiple holders of a legal or equitable title to, or a leasehold interest in, a CAIR NO_X unit, or where a utility or industrial customer purchases power from a CAIR NO_X unit under a life-of-the-unit, firm power contractual arrangement, I certify that:

I have given a written notice of my selection as the CAIR designated representative or alternate CAIR designated representative (as applicable) and of the agreement by which I was selected to each owner and operator of the CAIR NO_X source and each CAIR NO_X unit at the source; and

CAIR NO_X allowances and proceeds of transactions involving CAIR NO_X allowances will be deemed to be held or distributed in proportion to each holder's legal, equitable, leasehold, or contractual reservation or entitlement, except that, if such multiple holders have expressly provided for a different distribution of CAIR NO_X allowances by contract, CAIR NO_X allowances and proceeds of transactions involving CAIR NO_X allowances will be deemed to be held or distributed in accordance with the contract.

Clean Air Interstate Rule (CAIR) SO_2 Trading Program

I certify that I was selected as the CAIR designated representative or alternate CAIR designated representative (as applicable), by an agreement binding on the owners and operators of the CAIR SO_2 source and each CAIR SO_2 unit at the source (i.e., the source and each unit subject to the SO_2 Trading Program, as indicated in "Applicable Program(s)" in Step 4).

I certify that I have all necessary authority to carry out my duties and responsibilities under the CAIR SO_2 Trading Program, on behalf of the owners and operators of the CAIR SO_2 source and each CAIR SO_2 unit at the source and that each such owner and operator shall be fully bound by my representations, actions, inactions, or submissions.

I certify that the owners and operators of the CAIR SO_2 source and each CAIR SO_2 unit at the source shall be bound by any order issued to me by the Administrator, the permitting authority, or a court regarding the source or unit.

Where there are multiple holders of a legal or equitable title to, or a leasehold interest in, a CAIR SO_2 unit, or where a utility or industrial customer purchases power from a CAIR SO_2 unit under a life-of-the-unit, firm power contractual arrangement, I certify that:

I have given a written notice of my selection as the CAIR designated representative or alternate CAIR designated representative (as applicable) and of the agreement by which I was selected to each owner and operator of the CAIR SO_2 source and each CAIR SO_2 unit at the source; and

CAIR SO_2 allowances and proceeds of transactions involving CAIR SO_2 allowances will be deemed to be held or distributed in proportion to each holder's legal, equitable, leasehold, or contractual reservation or entitlement, except that, if such multiple holders have expressly provided for a different distribution of CAIR SO_2 allowances by contract, CAIR SO_2 allowances and proceeds of transactions involving CAIR SO_2 allowances will be deemed to be held or distributed in accordance with the contract.

Clean Air Interstate Rule (CAIR) NO_X Ozone Season Trading Program

I certify that I was selected as the CAIR designated representative or alternate CAIR designated representative (as applicable), by an agreement binding on the owners and operators of the CAIR NO_X Ozone Season source and each CAIR NO_X Ozone Season unit at the source (i.e., the source and each unit subject to the CAIR NO_X Ozone Season Trading Program, as indicated in "Applicable Program(s)" in Step 4).

I certify that I have all necessary authority to carry out my duties and responsibilities under the CAIR NO_X Ozone Season Trading Program on behalf of the owners and operators of the CAIR NO_X Ozone Season source and each CAIR NO_X Ozone Season unit at the source and that each such owner and operator shall be fully bound by my representations, actions, inactions, or submissions.

I certify that the owners and operators of the CAIR NO_X Ozone Season source and each CAIR NO_X Ozone Season unit shall be bound by any order issued to me by the Administrator, the permitting authority, or a court regarding the source or unit.

Where there are multiple holders of a legal or equitable title to, or a leasehold interest in, a CAIR NO_X Ozone Season unit, or where a utility or industrial customer purchases power from a CAIR NO_X Ozone Season unit under a life-of-the-unit, firm power contractual arrangement, I certify that:

I have given a written notice of my selection as the CAIR designated representative or alternate CAIR designated representative (as applicable) and of the agreement by which I was selected to each owner and operator of the CAIR NO_X Ozone Season source and each CAIR NO_X Ozone Season unit; and

CAIR NO_X Ozone Season allowances and proceeds of transactions involving CAIR NO_X Ozone Season allowances will be deemed to be held or distributed in proportion to each holder's legal, equitable, leasehold, or contractual reservation or entitlement, except that, if such multiple holders have expressly provided for a different distribution of CAIR NO_X Ozone Season allowances by contract, CAIR NO_X Ozone Season allowances and proceeds of transactions involving CAIR NO_X Ozone Season allowances will be deemed to be held or distributed in accordance with the contract.

Facility (Source) Name (from Step 1) Northern Arizona Energy Project

Certificate of Representation - Pag

General

I am authorized to make this submission on behalf of the owners and operators of the source or units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Signature (Designated Representative)	Date 3/9/07
Signature (Alternate Designated Representative)	Date 3/9/07

EPA Instructions for the Certificate of Representation

Note: The Certificate of Representation information can be submitted online through the CAMD Business System (CBS) at https://cfint.rtpnc.epa.gov/camd/cbs/index.cfm. You must have a user ID and password. If you need a user ID and password, or if you have questions about CBS, contact Laurel DeSantis at desantis.laurel@epa.gov or (202) 343-9191, or Alex Salpeter at salpeter.alex@epa.gov or (202) 343-9157.

Any reference in these instructions to the Designated Representative means the Acid Rain Designated Representative and/or CAIR Designated Representative, as applicable. Any reference to the Alternate Designated Representative means the Alternate Acid Rain Designated Representative and/or the Alternate CAIR Designated Representative, as applicable. As reflected in this form, the Acid Rain Designated Representative and the CAIR Designated Representative for a facility (source) must be the same individual, and the Alternate Acid Rain Designated Representative and the Alternate CAIR Designated Representative for a facility (source) must be the same individual, if such a facility (source) has units subject to both the Acid Rain and CAIR Trading Programs.

Please type or print. Submit one copy of page 2 for each unit subject to the Acid Rain or CAIR Trading Programs at the facility (source), and indicate the page order and total number of pages (*e.g.*, 1 of 4, 2 of 4, etc.) in the boxes in the upper right hand corner of page 2. **A Certificate of Representation amending an earlier submission supersedes the earlier submission in its entirety and must therefore always be complete.** Submit one Certificate of Representation form with original signature(s). For assistance, contact Laurel DeSantis at desantis.laurel@epa.gov or (202) 343-9191.

STEP 1 (i) A Plant Code is a 4 or 5 digit number assigned by the Department of Energy=s (DOE) Energy Information Administration (EIA) to facilities that generate electricity. For older facilities, APlant Code@ is synonymous with AORISPL@ and AFacility@ codes. If the facility generates electricity but no Plant Code has been assigned, or if there is uncertainty regarding what the Plant Code is, contact EIA at (202) 287-1732 or (202) 287-1745. For facilities that do not produce electricity, use the facility identifier assigned by EPA (beginning with A88@). If the facility does not produce electricity and has not been assigned a facility identifier, contact Laurel DeSantis at desantis.laurel@epa.gov or (202) 343-9191.

(ii) Enter the latitude and longitude representing the location of the units in the following format:

DDMMSS	Latitude
DDDMMSS	Longitude

Where **DD** represents degrees of latitude (a two-digit decimal number ranging from 00 through 90), **DDD** represents degrees of longitude (a three-digit decimal number ranging from 000 through 180), **MM** represents minutes of latitude or longitude (a two-digit decimal number ranging from 00 through 60), and **SS** represents seconds of latitude or longitude (a two-digit whole number ranging from 00 through 60).

STEPS 2 & 3 The Designated Representative and the Alternate Designated Representative must be individuals (i.e., natural persons) and cannot be a company. Enter the company name and address of the representative as it should appear on all correspondence. If an email address is provided, most correspondence will be emailed. **Although not required, EPA strongly encourages owners and operators to designate an Alternate Designated Representative to act on behalf of the Designated Representative.**

STEP 4 (i) Complete one page for each unit subject to the Acid Rain or CAIR Trading Programs, and indicate the program(s) to which the unit is subject. (For units subject to the NO_X Budget Trading Program, a separate "Account Certificate of Representation" form must be submitted to meet requirements under that program.) Identify each unit at the facility by providing the appropriate unit identification number, consistent with the identifiers used in previously submitted Certificates of Representation (if applicable) and with submissions made to DOE and/or EIA. Do not list duct burners. For new units without identification numbers, owners and operators must assign identifiers consistent with EIA and DOE requirements. Each submission to EPA that includes the unit identification number(s) (e.g., monitoring plans and quarterly reports) should reference those unit identification numbers in exactly the same way that they are referenced on the Certificate of Representation. Do not identify units that are not subject to the above-listed programs but are part of a common monitoring configuration with a unit that is subject to any of these programs. To identify units in a common monitoring configuration that are not subject to any of these programs, call the CAMD Hotline at (202) 343-9620, and leave a message under the ACEMS@ submenu.

(ii) Identify the type of unit using one of the following abbreviations:

Boilers		Boilers		Turbines	
AF	Arch-fired boiler	**OB**	Other boiler	**CC**	Combined cycle
BFB	Bubbling fluidized bed boiler	**PFB**	Pressurized fluidized bed boiler	**CT**	Combustion turbine
C	Cyclone boiler	**S**	Stoker	**OT**	Other turbine
CB	Cell burner boiler	**T**	Tangentially-fired boiler	Others	
CFB	Circulating fluidized bed boiler	**WBF**	Wet bottom wall-fired boiler	**ICE**	Internal combustion engine
DB	Dry bottom wall-fired boiler	**WBT**	Wet bottom turbo-fired boiler	**KLN**	Cement kiln
DTF	Dry bottom turbo-fired boiler	**WVF**	Wet bottom vertically-fired boiler	**PRH**	Refinery process heater
DVF	Dry bottom vertically-fired boiler				

If there is uncertainty about how a unit should be characterized, contact Robert Miller at miller.robertl@epa.gov or (202) 343-9077.

(iii) Indicate the source category description that most accurately describes the purpose for which the unit is operated by entering one of the following terms. If none of these descriptions applies to your unit, contact Robert Miller at miller.robertl@epa.gov or (202) 343-9077.

Automotive Stampings	Industrial Boiler	Petroleum Refinery
Bulk Industrial Chemical	Industrial Turbine	Portland Cement Plant
Cement Manufacturing	Institutional	Pulp and Paper Mill
Cogeneration	Iron and Steel	Small Power Producer
Electric Utility	Municipal Waste Combustor	Theme Park

(iv) Provide the primary North American Industrial Classification System (NAICS) code that most accurately describes the business type for which the unit is operated. If unknown, go to http://www.census.gov for guidance on how to determine the proper NAICS code for the unit.

(v) Enter the date the unit began (or will begin) serving any generator producing electricity for sale, including test generation. Enter this date and check the Aactual@ box for any unit that has begun to serve a generator producing electricity for sale as of the date of submission of this form. (This information should be provided even if the unit does not currently serve a generator producing electricity for sale.) For any unit that will, but has not begun, as of the date of submission of this form, to serve a generator producing electricity for sale, estimate the future date on which the unit will begin to produce electricity for sale and check the Aprojected@ box. When the actual date is established, revise the form accordingly by entering the actual date and checking the Aactual@ box. Enter "NA" if the unit has not ever served, is not currently serving, and is not projected to serve, a generator that producing electricity for sale. **You are strongly encouraged to use the CAMD Business System to update information regarding when a unit begins serving a generator producing electricity for sale.**

If you have questions regarding this portion of the form, contact Robert Miller at miller.robertl@epa.gov or (202) 343-9077.

(vi) For a unit subject to the Acid Rain Program or a CAIR unit that, as of the date of submission of this form, serves one or more generators (whether or not the generator produces electricity for sale), indicate the generator ID number and the nameplate capacity (in MWe) of each generator served by the unit. A unit serves a generator if it produces, or is able to produce, steam, gas, or other heated medium for generating electricity at that generator. For combined cycle units, report separately the nameplate capacities of the generators associated with the combustion turbine and the steam turbine. Please ensure that the generator ID numbers entered are consistent with those reported to the EIA.

The definitions of Anameplate capacity@ under the Acid Rain Program and the CAIR Programs differ slightly. Therefore, for a unit subject to the Acid Rain Program and any CAIR Program, the nameplate capacity for the same generator under the Acid Rain Program and under the CAIR Program may differ in certain limited circumstances. Specifically, for a unit subject to the Acid Rain Program, the nameplate capacity of a generator, if listed in the National Allowance Database ("NADB"), is not affected by physical changes to the generator after initial installation that result in an increase in the maximum electrical generating output that the generator is capable of producing. Otherwise, for a unit subject to the Acid Rain Program or a CAIR Program, the nameplate capacity of a generator is affected by physical changes to the generator after initial installation that result in an increase in the maximum electrical generating output that the generator is capable of producing. In such a case, the higher maximum electrical generating output number in MWe should be reported in the nameplate capacity column. Enter ANA@ if, as of the date of submission of this form, the unit does not serve a generator.

See the definition of Anameplate capacity@ at 40 CFR 72.2, 96.102, 97.102, 96.202, 97.202, 96.302, and 97.302, as applicable. The NADB is located at the CAMD website at http://www.epa.gov/airmarkets/allocations/index.html. If you have questions regarding nameplate capacity, contact Robert Miller at miller.robertl@epa.gov or (202) 343-9077; if you have questions regarding the NADB, contact Craig Hillock at hillock.craig@epa.gov or (202) 343-9105.

(vii) Enter the company name of each owner and operator in the ACompany Name@ field. Indicate whether the company is the owner, operator, or both. For new units, if the operator of a unit has not yet been chosen, indicate that the owner is both the owner and operator and submit a revised form when the operator has been selected within 30 days of the effective date of the selection. EPA must be notified of changes to owners and operators within 30 days of the effective date of the change. **You are strongly encouraged to use the CAMD Business System to provide updated information on owners and operators.**

Mail this form to:

For regular/certified mail:

U.S. Environmental Protection Agency
Clean Air Markets Division (6204J)
Attention: Designated Representative
1200 Pennsylvania Avenue, NW
Washington, DC 20460

For overnight mail:

U.S. Environmental Protection Agency
Clean Air Markets Division (6204J)
Attention: Designated Representative
1310 L Street, NW
Second Floor
Washington, DC 20005
(202) 343-9191

Submit this form prior to making any other submissions under the Acid Rain Program, CAIR NO_X Trading Program, CAIR SO_2 Trading Program, or CAIR NO_X Ozone Season Trading Program. Submit a revised Certificate of Representation when any information in the existing Certificate of Representation changes. **You are strongly encouraged to use the CAMD Business System to provide updated information.**

Paperwork Burden Estimate

The public reporting and record keeping burden for this collection of information is estimated to average 15 hours per response annually. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW., Washington, D.C. 20460. Include the OMB control number in any correspondence. **Do not send the completed form to this address.**

APPENDIX F

COMPLETENESS CHECKLIST

Completeness Checklist of Application for Air Quality Control Permit

Permittee: Northern Arizona Energy, LLC
App. Recvd. Date: _____

Address: 1735 Technology Dr, Ste 820,
San Jose, CA 95110
Permit No.: _____
Incomp Ltr. Date: _____

Equipment Location:
New Source: Approximately 9 miles southeast of the town Kingman, in Mohave County, Arizona
Addl. Info. Recvd.: _____

Renewal: _____ Revision: _____

Permit Class: 1 Title V Source: _____

Permit Engineer: _____ Portable: _____

Facility I.D. Number: _____ Engineer Initials: _____

Appx 1 Item #	Requirement	Meets Requirement				Refer to this application for Section No. & Item No.
		Yes	No	See Rmk No.	See Rmk No.	
R18-2-326	Have the appropriate application fees been included with the application if required?					Acc App Fee
Form	Has the standard application form been completed?					Sec. 1
Form	Has the responsible official signed the application?					Sec. 1
17.a.5	Has a Certification of Truth, Accuracy and Completeness been included?					Sec. 1
1.	Has a Description of the process to be carried out in each unit been included?					Sec. 2
2.	Has a product and raw material description been included?					Sec. 2
3.	Has a complete description of Alternate Operating Scenarios been included? (Optional)					NA
5.	Has a Flow Diagram for all processes been provided?					NA
6.	Has a Material Balance been included (if applicable)?					NA
7.	Has the Emission Sources form been completed and does it include potential emissions of regulated air pollutants (including fugitives)?					Sec. 1
8.	Have all the applicable SIP requirements been identified?					Sec. 5
8.	Have all the applicable NSPS requirements been identified?					Sec. 5
8.	Have all the applicable NESHAP requirements been identified?					Sec. 5
8.	Have all the applicable Installation Permit requirements been identified?					Sec. 5
9.	Have any proposed exemptions and insignificant activities been included (if applicable)? If so, has the applicant provided sufficient evidence?					Sec. 5
10 a., c.	Have the maximum annual and hourly process rates for each piece of equipment which generates air emissions been included?					Sec. 3
10 b., d.	Have the maximum annual and hourly process rates for the whole plant been included?					Sec. 3
10. e.	Has the fuel type and maximum usage (hourly and annual) information been included?					Sec. 3
10. f.	Has a description of all raw materials used and the maximum annual and hourly, monthly, or quarterly usage information been included?					NA
10. g.	Have the anticipated Operating Schedules been included?					Sec 2

Appx 1 Item #	Requirement	Meets Requirement				Refer to this application for Section No. & Item No.
		Yes	No	See Rmk No.	See Rmk No.	
10. h.	Have any Limitations on source operations and any work practice standards effecting emissions been included (if applicable)?					Sec. 1.2 & Appendix B
11.	Does the application include an equipment list with the type, name, make, model, serial number, and date of manufacture (if available)?					Sec. 1
12.	Does the application include the necessary stack information including: stack identification, description, exit height, inside dimensions, exit gas temperature and velocity, and building dimensions?					Sec. 4
13.	Does the application include a site diagram which includes: property boundaries, adjacent streets or roads, directional arrow, elevation, equipment layout, location of emission points, emission areas and air pollution control equipment and the closest distance between emissions and property boundary?					Sec 2
14. a.	Have the applicable test methods for determining compliance with each applicable requirement been included?					Sec. 7
14. b.	Does the application include an identification, description and location of air pollution control equipment?					Sec. 6
14. c.	Has the rated and operating efficiency of air pollution control equipment been included?					NA
14. d.	Has the data necessary to establish required efficiency for air pollution control equipment been included?					NA
14. e.	Has evidence that operation of the new or modified pollution control equipment will not violate any ambient air quality standards, or PSD increments been provided?					NA
15.	Have equipment manufacturer's bulletins and shop drawings been included (optional).					Appendix D
16. a.-d.	Has a Compliance Plan been included? (the compliance plan must address acid rain provisions, if applicable)					NA
16. a.	Does the application include a description of the compliance status of the source with respect to all applicable requirements (for constructed/operating sources)?					NA
16. a., b.	Has a description of how the new source or alteration will comply with applicable requirements been included (for new sources or modifications to existing sources)?					Sec. 7
16.b.1.	Does the application include a statement that the source will continue to comply with the applicable requirements with which they currently comply? (for constructed/operating sources).					NA
16. b.2.	Has a statement that the source will meet in a timely manner applicable requirements that become effective during the permit term been included?					Sec 7
16. b. 3.	Has a compliance schedule with remedial measures, including an enforceable sequence of actions with milestones, leading to compliance been included for applicable requirements with which the source does not currently comply?					NA
16. c.	Has a schedule for submission of certified progress reports no less frequently than every 6 months been included? (for sources required to have a schedule of compliance)					NA
17.	Has a certification of compliance by a responsible official been included?					Sec. 1
17. a. 1.	Does the application include an identification of the applicable requirements which are the basis of the certification?					Sec. 5

Appx 1 Item #	Requirement	Meets Requirement				Refer to this application for Section No. & Item No.
		Yes	No	See Rmk No.	See Rmk No.	
17. a. 2.	Has a statement of methods used for determining compliance been included?					Sec. 7
17. a. 3.	Has a schedule for submission of compliance submitted no less frequently than annually been provided?					Sec 7
17. a. 4.	Does the application include a statement indicating the source's compliance status with any applicable enhanced monitoring and compliance certification requirements? (if applicable)					NA
18.	Does the application include an acid rain compliance plan? (if applicable)					Sec 7
19. a. 1	Does the application include a LAER determination and the data and information used to determine LAER?					NA
19. a. 2.	Has a certification pursuant to A.A.C. R18-2-403(A)(2) been included? Such certification should list and describe all existing major sources owned and operated by the applicant and a statement of compliance.					NA
19. a. 3.	For sources subject to the offset requirements of R18-2-403(A)(3), does the application include a demonstration of the manner in which the source or modification meets the requirements of R18-2-404?					NA
19. a. 4.	Does the application include the analysis described in R18-2-403(B), if required (only for VOC or CO sources in photochemical oxidant or CO non-attainment areas)?					NA
19. b. 1.	Does the application include a demonstration of the manner in which the new source or modification will meet the requirements of R18-2-406?					NA
19. b. 2.	Does the application include a BACT determination and the data and information used to determine BACT?					NA
19. b. 3.	Does the application include an air impact analysis as per R18-2-407 and R18-2-406?					Sec. 4, Appendix B, C
19. b. 4.	If the applicant seeks an exemption from any of the requirements of R18-2-407 and R18-2-406, does the application include sufficient information to demonstrate compliance with the requirements of the subsections under which an exemption is sought?					NA
20.	Have the calculations on which all information is based been included in the application?					Appendix A
	Does the notification precisely identify in the application which is to be considered confidential?					NA
	Does the notification contain sufficient supporting information to allow the Director to evaluate whether the information satisfies the requirements related to trade secrets or, if applicable, how the information, if disclosed, is likely to cause substantial harm to the person's competitive position?					NA